#### FINAL REPORT OF GEOTECHNICAL INVESTIGATION

#### Rhode Island National Guard Maintenance Hanger

Quonset Air National Guard Base North Kingston, Rhode Island

#### Prepared by:

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#### NORTHEAST ENGINEERS & CONSULTANTS, INC. A Knowledge Corporation

Figure 1- Site Plan

Figures 2, 3 and 4 - Pile Capacity Charts

APPENDIX A: BORING LOGS AND LAB TEST RESULTS

#### 1.0 INTRODUCTION

This report presents the results of our geotechnical investigation for the proposed new Maintenance Hanger at the Quonset Air National Guard Base in North Kingston, Rhode Island. The facility will be located at the northwest corner of the intersection of Flightline Drive and Hercules Drive on the base. The proposed development and the project location are shown on the Site Plan, Figure 1.

#### 2.0 PROPOSED DEVELOPMENT

The project consists of a new maintenance hanger that will be approximately 304 feet long and 190 feet wide. The first Phase of the hanger will consist of the main service bay and a row of maintenance rooms along the rear wall. Phase 2 will consist of additions to each side of the Phase 1 structure that will be occupied by machine shops. A second story to the south addition will contain classrooms and offices.

The total maximum downward reaction at the rigid frame columns of the new hanger is expected to be approximately 283 kips, with column spacing at 25 feet. Maximum uplift reaction is expected to be approximately 92 kips. Maximum floor loads for the shop and office areas are expected to be 300 psf. The maximum tire load for an empty airplane is expected to be 17 kips, with distributed jacking load of 350 psf. The total gross airplane weight is expected to be 175,000 pounds.

The new hanger will have new paved parking areas to the north and south. Two new above ground fire water storage tanks and a pump station will also be constructed to the south and west of the main hanger building. Each water tank will have a capacity of 90,000 gallons and will have a concrete ring foundation. The pump house will be constructed with CMU walls and concrete slab with below grade pits in the corners. The structure will have a total load of about 100 psf.

#### 3.0 PURPOSE

The purpose of our investigation is to explore the subsurface conditions at the site in order to develop recommendations for site preparation and foundation design. This report is based on our borings and laboratory testing plus data from our previous geotechnical investigation for improvements to the nearby Squadron Operations Building. We previously submitted a preliminary report dated January 29, 2001, to provide geotechnical information for planning and preliminary structural design. This final report presents our final conclusions and recommendations that either supercede or supplement those in our preliminary report.

#### 4.0 SCOPE OF WORK

Our scope of work for this project has consisted of the following tasks:

- 1. A field exploration program that consisted of drilling, logging and sampling eight deep borings within the proposed hanger location to depths ranging from 38 to 50 feet, except one boring, B-5 that met refusal at a depth of 20 feet. Two deep borings were drilled at the proposed water tank and pump station locations to depths of 46 to 50 feet. Six shallow borings were drilled in the proposed parking areas and hanger apron entrance to depths of about 17 feet.
- 2. Engineering analyses utilizing the results of the field exploration and our previous investigation of the Squadron Operations Building to develop site preparation and foundation design recommendations.
- 3. Preparation of this report that summarizes the results of our field exploration, laboratory testing, engineering analyses, and recommendations for the proposed project. The report includes the following:
  - Description of surface and anticipated subsurface conditions.
  - Results of subsurface explorations with a description of the soil and groundwater conditions encountered.
  - Recommendations for earthwork, including site preparation, excavation, and the placing of any required compacted fill.
  - Suitability of on-site soils for use in compacted fills, and recommendations for borrow material, if required.
  - Foundation recommendations including:
    - -Allowable vertical bearing capacities and settlement characteristics for the anticipated building loads.
    - -Lateral load design parameters for foundations, e.g., the allowable frictional and passive values for bearing materials.
    - -Recommendation of remedial measures for any special problems encountered.

#### 5.0 FIELD EXPLORATION

Between January 25 and February 16, 2001, a total of ten deep borings and six shallow borings were excavated by our subcontractor Enviro-Tech Drilling, Inc. A representative from our office directed the drilling operations and obtained soil samples for laboratory testing. Logs of the borings are presented in Appendix A. Boring locations are shown on the Site Plan, Figure 1.

#### 6.0 LABORATORY TESTING

Our laboratory testing consisted of sieve analyses on six samples obtained from the borings to aid in classification, plus one California Bearing Ratio (CBR) test on a bulk sample of near surface soils for pavement design. A Proctor Compaction curve was also performed on this bulk sample to provide information on maximum dry density and optimum moisture content values for the CBR test, which was performed on a remolded sample compacted to 95% relative compaction to simulate probable pavement subgrade conditions during construction. Our laboratory test results are included in Appendix A.

#### 7.0 SITE CONDITIONS

#### SURFACE CONDITIONS

The site is currently vacant and covered with grass. The terrain is relatively level, except for a tree covered landscaping mound at the north portion of the site where a parking area is proposed. A paved roadway extends along the east and north sides of the hanger location. An underground storm drain crosses the hanger location.

#### SUBSURFACE CONDITIONS

#### EARTH MATERIALS

Each boring initially encountered a surface layer of medium dense sand that extended to depths of about 3 to 4 feet. Below this surface layer, each boring except B-6 and B-15 encountered fine to medium grained sand that was loose to very loose and wet and extended to a depth of about 15 to 18 feet. Borings B-6 and B-15 encountered medium dense to dense fine to coarse sand between the surface layer and a depth of about 15 feet. In seven of the 16 borings, primarily those in the southern portion of the site, the loose sand was underlain by a layer of soft peat between depths of 10 and 15 feet. The sand encountered within the upper 10 to 18 feet is likely to be previously placed fill.

Below a depth of 15 to 18 feet, each boring encountered native fine sand and silty sand that varied in consistency from medium dense to very dense. Boring B-1 met refusal at a depth of 38 feet; Borings B-4 and B-7 met refusal at a depth of 48 feet. Shale fragments were encountered at refusal depth in Boring B-4. Boring B-5 met refusal at a depth of only 20 feet; however, this was

most likely due to an isolated cobble or boulder. These subsurface conditions are similar to those encountered at the Squadron Operations Building.

Detailed descriptions of the soils encountered are presented on the boring logs in Appendix A.

#### GROUNDWATER

Groundwater was encountered in each boring between depths of 6 to 9 feet, with groundwater at 6 feet in most of the borings. Groundwater levels at the site are expected to fluctuate due to changes in water level and seasonal variations in rainfall, temperature, irrigation, tidal influence, and other factors.

#### 8.0 CONCLUSIONS AND RECOMMENDATIONS

#### GENERAL

It is our opinion, based on our field exploration, laboratory testing, and engineering analyses, that the site is suitable for the proposed construction when treated in accordance with the recommendations in this report. The primary geotechnical concern is settlement caused by consolidation of the soft peat and loose sands.

The layer of peat and portions of the existing fill are soft and loose and susceptible to compression and consolidation upon the application of structural loads that could result in significant settlement of the ground surface and any overlying structures. These conditions resulted in the nearby Squadron Operations building being constructed on timber piles driven into the medium dense to dense native sands to transfer the structural loads through the compressible zone, thus avoiding the triggering of any significant settlement. Since the project site has similar subsurface conditions, a similar pile foundation is a feasible solution for the proposed hanger and water tanks. To avoid problems with differential settlement, we recommend that the hanger floor be constructed as a structural slab supported by the pile foundation.

Other methods of reducing potential settlement include overexcavation of all loose and soft soils and replacement with compacted engineered fill, or ground modification to strengthen and reduce the compressibility of the soft and loose soils. These options would allow the use of shallow footings rather than piles. Overexcavation is not recommended since the depth of removal would extend well below the groundwater table requiring extensive dewatering and stabilization of the bottom. This option would likely be significantly more expensive than a pile foundation.

Ground modification methods that would be appropriate for the site conditions include jet grouting, vibro-replacement, or soil mixing. Each method involves the injection of grout or stone into the subsurface to strengthen the soft and loose soils. These methods involve specialized equipment and experienced specialty contractors, and are likely to be significantly more expensive than piles.

The proposed pump house will impose structural loads significantly less than the hanger or water tanks, so piles may not be necessary to reduce settlements. Depending on the depth of the structure, the loads may be no greater than the existing overburden stress of the soil. The main concern would be the achievement of a stable bottom of the structure, since it will likely be founded in loose sandy soil close to or below the water table. We can provide further recommendations for the pump house foundation after more design details become available.

#### SEISMIC DESIGN

For seismic design in accordance with the BOCA Building Code, the recommended site soil profile type is Type S3, giving a site coefficient S=0.15. The effective peak velocity-related acceleration (Av) and the effective peak acceleration (Aa) should both be taken as 0.12 g.

#### **LIQUEFACTION**

Liquefaction potential has been found to be the greatest where the groundwater level is shallow and loose fine sand occurs within 50 feet of the ground surface. Liquefaction potential decreases with increasing grain size, clay and gravel content, and soil density, but increases as the seismic ground acceleration and duration of shaking increases. The loose sandy fill in some areas of the site is partially below the ground water table and could be susceptible to liquefaction in a strong earthquake; however the use of a pile foundation will essentially eliminate the liquefaction hazard for the proposed buildings.

#### SITE PREPARATION AND GRADING

#### **GENERAL**

This section pertains to demolition, site preparation, incidental buried utility relocation or installation, and grading and excavations required for the project.

#### CLEARING AND GRUBBING

The site should be cleared of all debris and unsuitable or deleterious materials, or structures that conflict with the proposed construction. Utilities in conflict with the proposed construction should be relocated or removed from the site. Excavation should be performed as necessary to remove any loose or disturbed soils, if encountered. The resulting excavations or voids should be treated in a manner acceptable to the geotechnical consultant.

#### SUBGRADE AND PREPARATION OF FILL BOTTOMS

After overexcavation, the exposed bottoms should be observed by the geotechnical consultant to determine if additional overexcavation is required. After the bottoms are approved by the geotechnical engineer, they should be compacted to a minimum relative compaction of 95% based on ASTM D1557. If the bottoms cannot be compacted due to saturated conditions, the bottoms should be covered with a layer of stabilization geotextile followed by a minimum 2 foot

layer of crushed stone to create a stable subgrade before placement of engineered fill. A second layer of geotextile should be placed over the crushed stone before placement of engineered fill. The stabilization layer should be observed by the geotechnical consultant before placing the engineered fill to determine whether a stable subgrade has been achieved, and to assess whether additional stabilization measures are required, such as placement of a layer of additional oversize material or more geotextile.

#### FILL MATERIAL REQUIREMENTS

The onsite and any import materials used as engineered fill should consist of inorganic, well-graded non-expansive soils, and have a maximum size of six inches. The existing fill should be suitable, as long as any debris or organic material is removed. The peat beneath the fill is not suitable for fill.

#### FILL PLACEMENT AND COMPACTION REQUIREMENTS

Soil used as engineered fill should be moisture conditioned to near optimum moisture content, placed in 12 inch thick loose lifts and compacted to at least 95 percent of the maximum dry density as determined by ASTM D 1557-91. Crushed stone should be placed in layers not more than 2 feet thick and spread evenly to achieve compaction.

#### TYPES AND FREQUENCY OF FIELD TESTS FOR ENGINEERED COMPACTED FILL

The geotechnical consultant should be retained to observe and test all engineered compacted fill and backfill placement. The types and frequency of in-place field density tests during placement of engineered compacted fill and frequency of laboratory determinations of maximum density of fill materials should generally be left to the discretion of the geotechnical consultant.

As a general guideline, at least one in-place field density test should be performed for every two feet vertical of fill placed in a single operation, or for every 500 cubic yards of fill placed in a single operation, or for each soil type used, or each single compaction operation. A laboratory Compaction Characteristics Test (ASTM D 1557) will be required when there is a change in the compaction characteristic of the on-site material or import material being used.

#### **UTILITY INSTALLATIONS**

Sides of trenches should be sloped or shored in accordance with OSHA standards. Properly designed trench shields may be used in lieu of shoring. We recommend that excavations less than five feet deep be sloped or protected with portable trench shields. The on site sandy fill soils are susceptible to possible caving, which represents a potential hazard to workmen hunched over for installations of conduits, even in shallow excavations.

Backfill under, around and over buried conduits should be compacted to at least 90 percent of the maximum dry density as determined by ASTM D 1557. Buried utility lines should be provided with bedding as recommended by the project civil engineer, or the utility company or agency that

has jurisdiction. Excavation should be performed as necessary to remove all loose and disturbed soils and unsuitable fill materials

#### PILE FOUNDATIONS

#### **GENERAL**

The proposed hanger and water tanks should be supported by drilled or driven piles that derive vertical support in the dense native sands beneath the fill and peat layers. Feasible pile options include driven timber piles, driven steel pipe piles, cast-in-place reinforced concrete drilled piles, or pressure-injected footings (PIF), otherwise known as Franki Piles. Timber piles are typically the least expensive type; the one concern would be protection against rot above the water table. Because of their taper, timber piles do not provide much uplift capacity. Steel pipe piles provide higher downward capacity per pile but at higher cost. Steel piles would need protection against corrosion. Drilled cast-in-place concrete piles may need to be cased resulting in significantly higher cost than the driven piles. Steel pipe piles and drilled cast-in-place piles also do not provide much uplift capacity because of the limited adhesion to the steel pipe or casing.

Franki piles are driven cast-in-situ concrete piles that have enlarged bases that can provide high downward and uplift capacities. They are constructed by driving zero-slump batches of concrete through a steel casing with an internal hammer that densifies the surrounding soil. The casing is typically removed as the pile is formed, and steel reinforcement is added if needed, especially if uplift capacity is required. Downward vertical capacity is a function of the diameter, hammer energy, and concrete batch volume. Recommended maximum working loads range from 50 to 300 tons. Once a suitable bearing layer is encountered, the pile installation method can be adjusted to achieve the desired allowable capacity. Uplift capacities are a function of the volume and depth of the enlarged base. Franki piles are the most effective in fine grain sands and silty sands.

Franki piles may be the best choice for the hanger columns due to their relatively high downward and uplift capacities.

The floor of the hanger should consist of a structural slab that is supported by piles. Since no uplift resistance is required and loads are relatively light, timber piles are probably the best choice to support the floor slab.

The water storage tanks should be constructed on mat foundations supported by piles. Timber piles or Franki piles may be appropriate depending on the structural loads. Similarly, either pile type may be suitable for the pump house, if piles are determined to be required, and depending on the load conditions.

#### AXIAL CAPACITY

Timber piles are typically limited in capacity to 25 to 30 tons. The capacities of steel pipe piles and drilled cast-in-place piles are limited by the strength of the steel and concrete. Recommended allowable downward axial and uplift capacities of timber piles, steel pipe piles,

and drilled cast-in-place concrete piles are plotted verses depth on Figures 2, 3, and 4, respectively. The capacities for steel pipe piles assume closed-end driven piles, and the capacities for drilled piles assume they are cased for their full length. The allowable downward capacities were calculated applying a safety factor of 3 for dead plus live loads. The weight of the piles may be neglected. Uplift capacities were calculated assuming a safety factor of 2 for wind and seismic loads in combination with dead and live loads.

Standard Franki piles with a nominal shaft diameter of 22 inches should be able to achieve the maximum allowable downward axial load of 200 tons with the base constructed in the native dense sands at depths of 20 feet or deeper. This assumes a safety factor of 3 for dead plus live loads. Allowable uplift capacity is dependent on the pile depth and size of the base. Assuming a base volume of 10 cubic feet, allowable uplift capacities of 24 tons and 72 tons should be achievable for pile depths of 20 feet and 25 feet, respectively. These values assume a safety factor of 2 for dead plus live plus seismic/wind loads. For the site conditions and loading requirements, uncased zero-slump concrete piles with steel reinforcement are recommended.

The allowable bearing values are based on the soil conditions, and the structural design of the piles may govern the final design dimensions. Concrete strength and steel reinforcement shall be the responsibility of the project structural engineer.

The total settlement of the proposed pile foundation is not expected to exceed one-half inch. Differential settlements between two adjacent similarly loaded foundations are not expected to exceed one-quarter inch. Settlements are expected to occur shortly after vertical loads are applied.

#### PILE INSTALLATION

Driven piles should be spaced no closer than three times the diameter to achieve the full capacity and to avoid conflict with adjacent piles. We recommend that at least one downward and one uplift load test be performed on each type of pile to confirm design capacities and to develop final installation criteria. Our firm should be allowed to review the pile design and hammer submittal, monitor the load tests, and should provide fulltime monitoring of the pile driving to determine if the design capacities are achieved.

Driven piles should be predrilled through the upper dense fill layer. Drilled piles will probably need to be cased through the loose sandy fill to avoid caving.

#### PASSIVE CAPACITY

The allowable lateral passive capacity of piles bearing against the existing fill and native soils may be taken as equivalent to that of a fluid weighing 250 pounds per cubic foot (pcf), to a maximum value of 2,500 psf. These values incorporate a factor of safety of 2.0 and consideration of the "end affect", and should conform to the minimum spacing requirements presented herein. These values may be increased by one-third for wind or seismic loads.

#### DRAINAGE

The site should be graded to provide for positive drainage away from structures in accordance with the building code and applicable local requirements. Graded pads should slope no less than 2% to drain. Paved areas should slope at least 1% to drain. Concentrated roof and surface drainage from the site should be collected in engineered, non-erosive drainage devices and conducted to a safe point of discharge. The site drainage should be designed by a civil engineer.

#### PAVEMENT DESIGN

We developed recommendations for pavement design based on information you provided and our field and laboratory testing. The existing near surface soils are silty sands that have a CBR value of 23 when compacted to 95% relative compaction based on ASTM D 1557. We used this value for our recommendations assuming there will be no significant cuts or fills in the pavement areas, or that no imported soils will be used in these areas; otherwise our recommendations may need modification.

The paved parking areas planned for the north and south sides of the hanger should consist of a 3 inch layer of asphalt concrete over 8 inches of aggregate base. The aggregate base and upper 12 inches of subgrade should be compacted to a minimum 95 % relative compaction.

We recommend that the concrete apron entrance to the hanger consist of a 12-inch concrete slab over a 4-inch aggregate base layer, assuming an allowable concrete working stress of 450 psi. The base layer and upper 12 inches of subgrade should be compacted to a minimum 95 % relative compaction.

#### **PLAN REVIEW**

The geotechnical consultant should be retained to review grading and foundation plans and specifications to ascertain conformance with site conditions and recommendations presented herein.

#### **TESTING AND OBSERVATION**

The geotechnical consultant should be retained to perform on-site construction observations and testing to ascertain that conditions correspond to the findings and conclusions presented herein and that construction conforms generally to the recommendations presented herein. The geotechnical consultant should be called out for testing and observations as indicated in this report and at least for the following:

Full time observation of pile driving operations.

Inspection of all subgrade and fill bottoms following excavation, before scarifying, recompaction and any fill is placed.

Continuous inspection of all temporary construction excavations located closer to existing structures than one and one-half times the depth of excavation, and inspection of all other

temporary construction excavations following excavation, before beginning work near the sides of excavation.

Testing and inspection of all fill placement as discussed under the subsection Types and Frequency of Field Tests for Engineered Compacted Fill.

Inspection of all foundation excavations before rebar or concrete is placed.

It is the responsibility of the contractor to coordinate all inspections and testing required by this firm or by other regulatory agencies. We should be should be given at least 48 hours notice that construction is commencing and no less than 24 hours notice of required geotechnical tests and/or inspections.

#### 9.0 LIMITS OF INVESTIGATION

The analyses, conclusions, and recommendations contained in this report are based on site conditions as they existed at the time of our investigation and further assume that the explorations to be representative of the subsurface conditions throughout the site. No warranty is made nor should any be construed that unforeseen geotechnical or geological weakness may not exist between exploratory points or below the depths explored. If different subsurface conditions are observed during construction, we should be promptly notified for review and reconsideration of our recommendations.

This report was prepared for the exclusive use and benefit of the owner, architect, and engineer for evaluating the design of the facility as it relates to certain geotechnical aspects. It should be made available to prospective contractors for information on factual data only, and not as a warranty of subsurface conditions included in this report.

If the proposed development is substantially modified from that which is discussed herein under **Proposed Development**, we should be retained to review the new proposed development to ascertain whether our findings, conclusions, and recommendations remain applicable.

Site conditions can change with time. If more than 18 months have passed since the submittal of this report, we should review the site to determine if our conclusions and recommendations are still applicable.

We recommend that Northeast Engineers & Consultants be retained and given the opportunity to review those portions of the plans and specifications that pertain to foundations and earthwork to ascertain whether they are consistent with the recommendations of this report, and to inspect construction, particularly foundations, shoring, site grading, and earthwork to ascertain whether site conditions are consistent with those described in this report, and that construction conforms to our recommendations. The review of plans and specifications, and construction monitoring and testing by Northeast Engineers & Consultants is an integral part of the conclusions and recommendations made in this report, and if others are retained for these services, the client will be assuming responsibility for any potential claims that may arise during or after construction.

The services described in this report include professional opinions and judgments based on the data collected. Our investigation was performed using the standard of care and level of skill ordinarily exercised under similar circumstances by reputable geotechnical engineers currently practicing in this or similar localities. No other warranty, express or implied, is made as to the conclusions and professional advice included in this report.

Project No. 00261.0 RIANG Hanger Final Geotechnical Report We would be pleased to provide you with additional consultation services through the design and construction phases of this challenging project. If you have any questions concerning this report, please contact us.

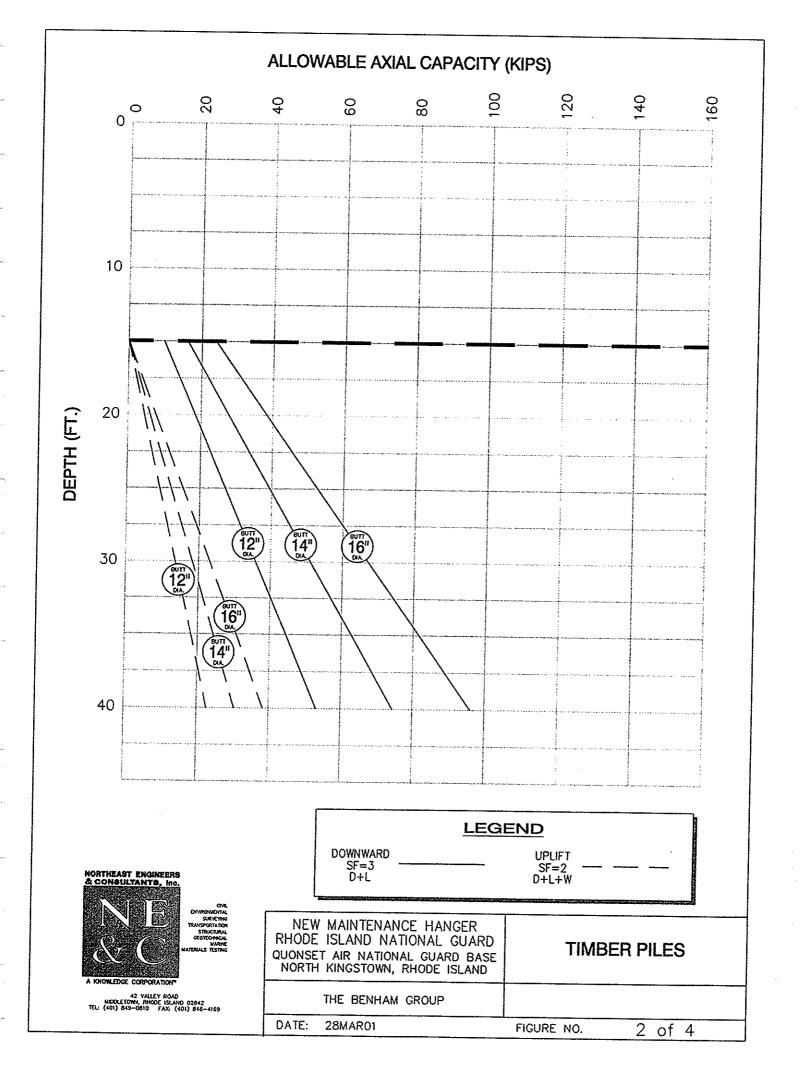
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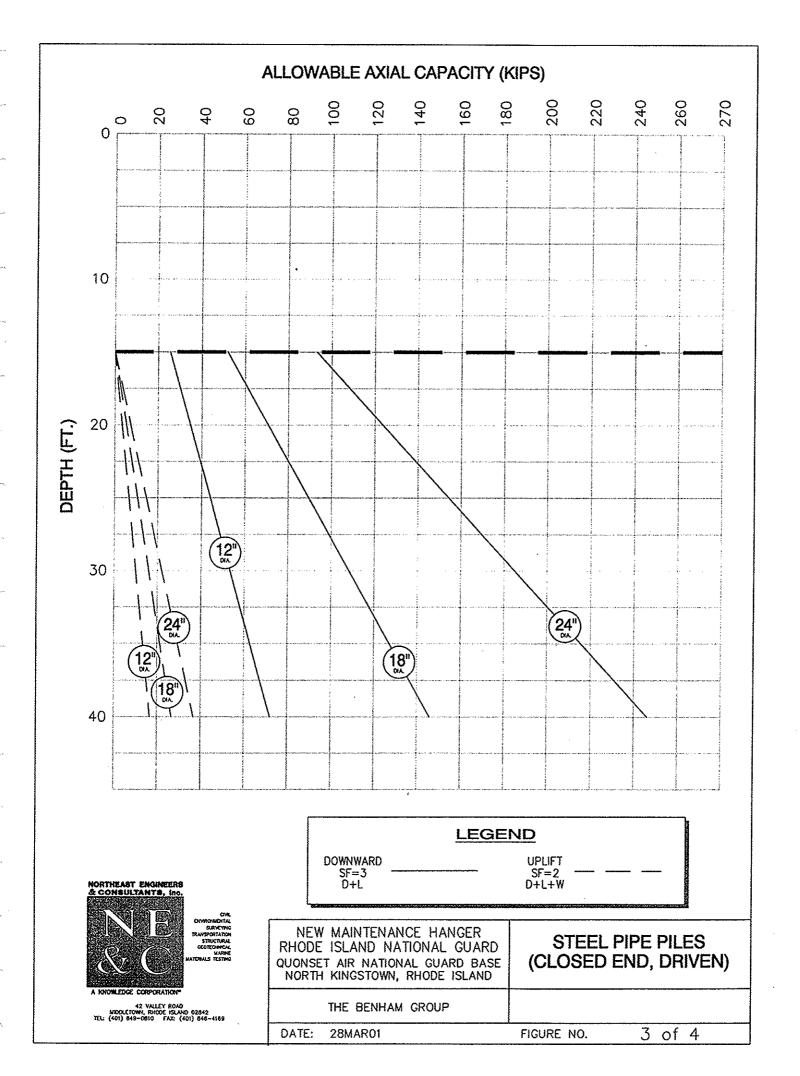
NORTHEAST ENGINEERS & CONSULTANTS, INC.

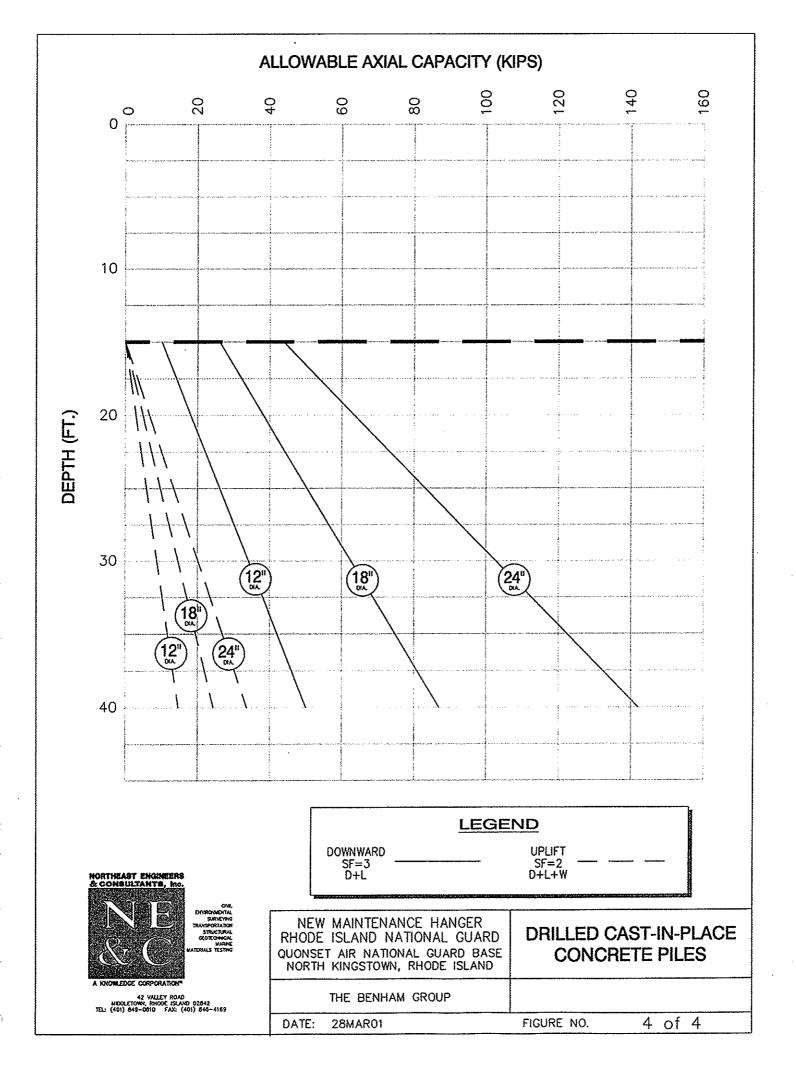
DANIEL P. O'CONNELL, P.E., G.E.

Chief Geotechnical Engineer









#### 10.0 APPENDICES

#### APPENDIX A: BORING LOGS AND LAB TEST RESULTS

# Tel. (800) 535-3577 NVIRO-TECH DRILLING, INC

BORING / WELL

CLIENT N. E. ENGINEERS MIDDLETOWN, R.I. PROJECT NEW MAINTAINENCE HANGAR

		125 Tremont Street Rehoboth, MA 02769				1	LO	)G	R.I. AIR NATIONAL GUARD			
	ALCA!	<b>)</b>	Rehoboth, M	A 02769		,			QUONSET POINT, R.I.			
DRILLER		<u>D. E</u>	BILEZIKIAN				BORING		CASING SAMPLER CORE BARREL			
INSPECT				0.770.71			NO.	<u>B-1</u>	LICA CC			
LINE & S' SUR.ELE				OFFSET			SHEET OF	1	TYPE HSA SS SIZE ID 4.25 IN./3.00 IN. 1.375 IN.			
START	••	JAN	NUARY 25, 20	01			FILE		HAMMER WT. 300 LB. 140 LB.			
FINISH		JAI	NUARY 25, 20				NO.	01014	HAMM. FALL 24 IN. 30 IN.			
DEPTH	COL.	NO.	DEPTH RANGE FEET	SAMPLE REC / PEN	BLOWS/6" ON SAMPLER	TYPE	MOISTURE DENSITY OR CONSIST	STRAT. CHANGE FEET	SAMPLE CLASSIFICATION AND REMARKS			
-		1	0' 6"-2' 6"	17"/24"	5-10	s	Medium		Moist, olive brown FINE TO MEDIUM SAND, trace - little silt, trace			
					9-11		Dense	0' 6"	organics			
									Dry, tan, FINE TO MEDIUM SAND			
		_				ļ						
5							<b> </b>					
		2	5'-7'	18"/24"	1-2	S	Very	5' 10"	Wet, tan to brown, FINE SAND			
					1/12"	<u> </u>	Loose	01.40#	Wet, brown ORGANIC SILT			
		_				-		6' 10"	Mark office house CINE CAND field oils Areas promise			
10							<del> </del>		Wet, olive brown FINE SAND, little silt, trace organics			
.0		3	10'-12'	16"/24"	33-28	s	Dense		Wet, gray-brown FINE TO COARSE SAND, little fine gravel, trace			
		Ĭ			11-9		Detac		silt and angular rock fragments (poss. fill)			
15									·			
	14	4	15'-17'	16"/24"	4-4	s	Loose	16' 6"	Wet, gray-brown FINE SAND, trace fine to coarse gravel			
	21				4-3				Wet, brown MEDIUM SAND, trace coarse sand and fine gravel			
	32								NOTE: SWITCHED TO NW CASING AT 18'			
	16	5	18'-20'	16"/24"	12-25	s	Dense		Brown, FINE SAND, little medium sand, trace coarse sand, silt			
20	18	<u> </u>			16-18	<u> </u>			and shell fragments			
	23						1					
	47											
	46 48	6	23'-25'	18"/24"	28-31	s	Very		Gray, FINE SAND, trace - little silt			
25	34		23 -25	10 /24	33-27	3	Dense		Gray, Fixe SAND, trace - intie Sit			
	49		<u> </u>		00-2.			*				
	57											
	75											
	65	7	28-'30'	14"/24"	23-28	s	Very		Gray-brown FINE SAND, trace silt			
30	80				41-49		Dense					
	104					<u> </u>						
	70	<del> </del>				-	<u> </u>		,			
	98	-				<u> </u>	<del> </del>					
	103	8	33'-35'	17"/24"	15-19	S	Dense		Gray, FINE SAND, trace - little silt			
35	85	<del> </del>			17-25	<del> </del>						
	98 113	$\vdash$				<del>                                     </del>						
,	109											
	103	9	38'-38'2"	1"/2"	100/2"	s	Spoon	38' 2"	Poor Recovery (rock fragments)			
40		Ť		· · · · -		ľ	Refusal		END OF BORING AT 38' 2"			
	SAMI	PLE I	DENTIFICATION	٧ .	PENET	RAT	ON RESISTA	NCE	COLUMN A GROUNDWATER OBSERVATIONS			
	S-SP			-	1	_	30° on 2° O.D. S	•	AT 7 ft. AFTER 0 HRS			
			LL TUBE RBED PISTON		Cohesionless De 0-4 Very Lo		Cohesive Co 0-2 Ven		PROPORTIONS USED AT AFTER HRS			
			ID ROD		5-9 Loose 10-29 Med. [	10000	3-4 Soft		trace 0-10%   ittle 10-20%   NOTE: Levels may vary with seasonal fluctuation and			
l	W-W/				30 - 49 Very	·		ff	some 20-35% the degree of soil saturation when the boring was taken.			
	A - AUGER SAMPLE			50+ Very De	nse	16-30 V	ery Stiff	and 35-50%				

#### Tel. (800) 535-3577 NVIRO-TECH DRILLING, INC. 125 Tremont Street

Rehoboth, MA 02769

#### **BORING** / WELL LOG

#### CLIENT N. E. ENGINEERS MIDDLETOWN, R.I.

PROJECT NEW MAINTAINENCE HANGAR

R.I. AIR NATIONAL GUARD

QUONSET POINT, R.I. D. BILEZIKIAN DRILLER BORING CASING SAMPLER CORE BARREL INSPECTOR **B-2** NO. OFFSET SHEET 1 **HSA** LINE & STA TYPE 4.25 IN./3.00 IN. 1.375 IN. SUR ELEV. SIZE ID OF **JANUARY 26, 2001** START FILE HAMMER WT. 300 LB. 140 LB. **JANUARY 26, 2001** 01014 FINISH NO. HAMM, FALL 24 IN. 30 IN. DEPTH MOISTURE STRAT. SAMPLE CLASSIFICATION DEPTH RANGE NO. DENSITY OR CONSIST REC/ BLOWS/6 CHANGE AND REMARKS ON SAMPLER FEET FEET PEN 1 0'-2' 22"/24" 29-17 S Dry, dark brown, silty, FINE TO COARSE SAND, some organics Dense 22-17 1' 4" Light gray, FINE TO COARSE SAND 5 S 5 -7 12"/24" 3-4 Loose Moist, gray FINE TO MEDIUM SAND, trace coarse sand and fine 2-2 to medium gravel 10 10'-12' 22"/24" 2-2 S Very 11' Wet, gray FINE TO MEDIUM SAND 2-2 Dark brown, fibrous PEAT Loose 15 4 15'-17' 24"/24" 5-10 S Medium Gray, FINE TO MEDIUM SAND, trace coarse sand 14-14 Dense NOTE: Swtiched to NW casing at 18' 5 16"/24" Dense 18'-20' 11-16 s Gray FINE SAND, little medium sand 20 10 18-22 25 30 35 15 23'-25' 14"/24" 19-22 s Dense Gray-brown FINE TO MEDIUM SAND, trace-little coarse sand 25 22 25-32 and fine gravel 40 60 86 31 28-'30' 18"/24" 29'6" Dense Gray-brown, FINE TO MEDIUM SAND, trace-little coarse sand 15-25 20 23-26 Brown, MEDIUM SAND, trace-little coarse sand and fine gravel 36 71 75 35 33'-35' 15"/24" s Medium Gray, FINE SAND, trace - little silt 12-12 35 36 11-11 Dense 45 33 33 38'-40"" 15"/24" 7-9 Medium Gray, FINE SAND, little - some silt 40 END OF BORING AT 40' Dense SAMPLE IDENTIFICATION PENETRATION RESISTANCE **COLUMN A GROUNDWATER OBSERVATIONS** S - SPLIT SPOON 140 lb. Wt. falling 30" on 2" O.D. Sampler HRS T - THIN WALL TUBE 9 ft. 0 Cohesionless Density Cohesive Consistency AT. **AFTER** U - UNDISTURBED PISTON 0-4 Very Loose 0-2 Very Soft PROPORTIONS USED AFTER HRS O - OPEN END ROD 5-9 Loose 3-4 Soft trace 0-10% W-WASH SAMPLE 10-29 Med. Dense 5-8 Med. Stiff NOTE: Levels may vary with seasonal fluctuation and little 10-20% A - AUGER SAMPLE 30 - 49 Very Dense 50+ Very Dense 9-15 Stiff 16-30 Very Stiff some 20-35% and 35-50% the degree of soil saturation when the boring was taken. 31+ Hard

## Tel. (800) 535-3577 NVIRO-TECH DRILLING, INC. 125 Trement Street

#### BORING / WELL LOG

### CLIENT NORTHEAST ENGINEERS MIDDLETOWN R.I.

PROJECT R.I. AIR NATIONAL GUARD

,	457		125 Tremont	Street	-	/	LC	)G	QUONSET POINT, R.I.					
	W CV		Rehoboth, M	A 02769					1					
DRILLER INSPECT		<u>D, E</u>	BILEZIKIAN				BORING	B-3		CASING	SAMPLER	CORE BARREL		
UNE & S				OFFSET			NO. SHEET	1	TYPE	HSA	SS			
SUR.ELE	V.						OF	2	SIZE ID	4.25 IN.	1.375 IN.			
START			IUARY 25, 20 IUARY 26, 20				FILE	04044	HAMMER WT.		140 LB. 30 IN.			
FINISH DEPTH				SAMPLE			NO. MOISTURE	01014 STRAT.	HAMM. FALL	SAMPLE CLASS	FICATION			
	Α	NO.	DEPTH RANGE FEET	REC / PEN	BLOW\$/6" ON SAMPLER	TYPE	DENSITY OR CONSIST	CHANGE FEET		AND REM	ARKS			
		1	0'6"-2'/6"	14"/24"	11-15	s	Medium	1'6"	Dry, brown FINE 7	O COARSE SAND	, trace fine grave	i (FILL)		
					13-14		Dense		Dry, tan FINE SAN	ID, little medium to	coarse sand (Fil	L)		
	ļ													
5						_								
		2	5'-7'	13"/24"	5-4	S	Loose		Wet, tan, FINE TO MEDIUM SAND					
					4-4	-								
10														
		3	10'-12'	12"/24"	3-2	s	Very		Wet, light brown, I	FINE SAND, trace	silt, trace coarse	gravel		
					2-4		Loose							
,														
15_	-													
		4	15'-17'	20"/24"	10-15	s	Medium		Wet, gray-brown F	FINE SAND, trace i	nedium to coarse	sand trace-		
					12-14		Dense		little silt NOTE: SWITCHED TO NW CASING AT 18'					
		5	18'-20'	0"/24"	12-15	s	Dense		No Recovery (gray					
20		-	10 -20	0 /2.4	15-18		Dense		No Recovery (gra	y inic sand in was	""			
												l		
												l		
		6	23'-25'	16"/24"	8-9	<u>s</u>	Medium		Dark gray, FINE S.	AND, little-some s	ilt			
25					14-23		Dense							
				<del></del> ;										
		7	28'-30'	7"/24"	14-12	s	Medium		Dark gray, SILT, li	ttle fine cand		İ		
30		•	2,5 -00	, ,,,	11-12		Dense		Daik gray, O.L., ii	ide ille salla		İ		
												Ī		
												l		
												l		
		8	33'-35'	14"/24"	15-25	S	Very		Gray, FINE SAND,	trace silt		1		
35_			· · · · · · · · · · · · · · · · · · ·		25-29		Dense		,					
·														
		9	38'-40'	18"/24"	18-22	s	Very		Gray-brown, FINE	SAND some sit				
40			VV -1V	10.124	29-32	_ <u>~</u> _	Dense	40'	END OF BORING	· ·				
			ENTIFICATION	1		кап	ON RESISTA		COLUMN A		WATER OBSERV	ATIONS		
		SAMPLE IDENTIFICATION FERE ITATI 140 lb. Wt. falling 1 - THIN WALL TUBE Cohesionless Density			30" on 2" O.D. S Cohesive Co	•		AT 6ft	AFTER	0 HRS				
	U - UNI	BUTEK	RBED PISTON		0-4 Very Loo		0-2 Veg		PROPORTIONS USED		AFTER	HRS		
	O-OP				5-9 Loose 10-29 Med. D	enso	3-4 Soft 5-8 Med		trace 0-10% little 10-20%	NOTE: Laure	may vary with seasona	I fluctuation and		
					30 - 49 Very I	Dense	9-15 Sti	ff	some 20-35%	5	may vary with seasons I saturation when the bo	1		
		A - AUGER SAMPLE 30 - 49 Very De 50+ Very De				ise	16-30 V 31+ Har	ery Stiff d	and 35-50%					

# Tel. (800) 535-3577 ENVIRO-TECH DRILLING, INC. 125 Tremont Street

#### BORING / WELL LOG

## CLIENT NORTHEAST ENGINEERS MIDDLETOWN R.I. PROJECT R.I. AIR NATIONAL GUARD

		ا سد	25 Tremont	Street	•	\	LC	)G	QUONSET POINT, R.I.			
	NO.		Rehoboth, MA	A 02769		j	\					
DRILLER			ETTE				BORING	D 4	CASING SAMPLER CORE BARREL			
INSPECT		M. P	ONTE				NO.	B-4	TYPE HSA/NW SS			
LINE & ST				OFFSET			SHEET	<del>1</del> 2	TYPE HSA/NW SS SIZE ID 4.25 IN./3.00 IN. 1.375 IN.			
SUR:ELE\ START		FFR	RUARY 1, 20	304			FILE		HAMMER WT. 300 LB. 140 LB.			
FINISH			RUARY 1, 2				NO.	01014	HAMM, FALL 24 IN. 30 IN.			
DEPTH	COL			SAMPLE			MOISTURE	STRAT.	SAMPLE CLASSIFICATION			
	A	NO.	DEPTH RANGE FEET	REC / PEN	BLOWS/6" ON SAMPLER	TYPE	DENSITY OR CONSIST	CHANGE FEET	AND REMARKS			
		1	0'-2'	7"/24"	31-9	s	Medium		Moist, dark brown silty FINE SAND, some medium to coarse			
ł					3-3		Dense		gravel, little-some organics (FILL)			
_												
5_		~	E1 71	0"04"	F 0	s	Madium	5'-7'	What allies arou FINE CAND little medium to coams cand (Ell I )			
		2	5'-7'	9"/24"	5-9	3	Medium	5-/	Wet, olive-gray FINE SAND, little medium to coarse sand (FILL)			
					13-12		Dense					
						_						
10_			<del> </del>						<u>-</u>			
		3	10'-12'	22"/24"	2-2	s	Very	10'-12'	Moist, greenish-gray FINE SAND AND SILT, some organics (FILL)			
					2-4		Loose					
15												
		4	15'-17'	14"/24"	5-5	s	Medium	15'-17'	Wet, greenish-gray FINE SAND, little silt			
					5-5		Dense		NOTE: Switched to NW casing at 18'			
					<del></del>							
		5	18'-20'	17"/24"	11-11	s	Medium	18'-20'				
20		<b>–</b>	10-20	11.727	14-18	Ŭ	Dense	10-20				
20					14-10		Dense					
									-			
									-			
				011/0411	44.44			001.054				
		6	23'-25'	8"/24"	10-11	S	Medium	23'-25'	Wet, greenish-gray FINE SAND, little silt, trace coarse sand			
25					11-11		Dense		_			
						_			· ·			
		<u> </u>				<u> </u>			_			
		7	28'-30'	14"/24"	9-8	S	Medium	28'-30'	Wet, greenish-gray FINE TO MEDIUM SAND, trace coarse sand			
30					9-11		Dense					
		8	33'-35'	16"/24"	5-6	s	Medium	33'-35'	Wet, greenish-gray FINE TO MEDIUM SAND, trace-little coarse sand			
35					11-11		Dense					
-								1				
		$\Box$							1			
		$\vdash$		<b> </b>		-			1			
	<del>                                     </del>		201 401	07/04/	44.00	_	D	201 401	Mark brown Fibit TO RECOVER CAND little season and and fine			
	<del> </del>	9	38'-40'	9"/24"	11-20	S	Dense	38'-40'	Wet, brown FINE TO MEDIUM SAND, little coarse sand and fine			
40		23-22				ON PROJECT	L.	to medium gravel				
		4					ION RESISTA		COLUMN A GROUNDWATER OBSERVATIONS			
	S - SPLIT SPOON 140 lb. Wt. falling T - THIN WALL TUBE Cohesionless Density			_	Cohesive C		AT 6ft AFTER 0 HRS					
			RBED PISTON		0-4 Very Lo	ose	0-2 Ve	ry Soft	PROPORTIONS USED AT AFTER HRS			
	O-OP				5-9 Loose 10-29 Med. E	)ence	3-4 Sol 5-8 Me		trace 0-10%  Ittle 10-20%  NOTE: Levels may vary with seasonal fluctuation and			
	A-AU				30 - 49 Very	Dense	9-15 \$1	tiff	some 20-35% the degree of soil saturation when the boding was taken.			
					50+ Very De	nse	16-30 \	Very Stiff	and 35-50%			

RILLER							BOR WE LC	ING / LL DG	CLIENT NORTHEAST ENGINEERS  MIDDLETOWN R.I.  PROJECT R.I. AIR NATIONAL GUARD  QUONSET POINT, R.I.  CASING SAMPLER CORE BARREL				
NSPECT							NO.	B-4		CASING	OAMICEEN	WITE WHITE	
INE & S	TA			OFFSET			SHEET	2	TYPE	HSA/NW	<u>SS</u>		
UR.ELE TART		FFF	BRUARY 1, 20	<u> </u>			OF FILE	2	SIZE ID 4.2 HAMMER WT.	300 LB.	1.375 IN. 140 LB.		
NISH			BRUARY 1, 20	003			NO.	01014	HAMM. FALL	24 IN.	30 IN.		
EPTH	COL	NO.	DEPTH RANGE	SAMPLE REC/	BLOWS/6"	TYPE		STRAT, CHANGE		SAMPLE CLASSI AND REM	IFICATION ARKS		
<del>/</del>		-	FEET	PEN	ON SAMPLER	+	OR CONSIST	FEET			<del> </del>		
		10	43'-45'	8"/24"	6-10	s	Medium		Wet, gray-brown, F	FINE SAND, little-s	some silt		
45					12-14	<u> </u>	Dense						
	<u> </u>					—							
				-		+	<del>  </del>	İ					
		11	48'-48' 3"	2"/3"	140/3"	s	Spoon	48' 3"	Wet, dark gray SH	ALE FRAGMENTS	5		
50							Refusal		END OF BORING A				
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<del></del>	SAMI S-SPI		DENTIFICATION	N .	1		ION RESISTA		COLUMN A	GROUND	WATER OBSER	ATIONS	
	T-TH	IN WAI	LL TUBE		Cohesionless D	ensity	Cohesive Co	onsistency		AT	AFTER	HRS	
					0-4 Very L	oose	0-2 Ver 3-4 Sof	-	PROPORTIONS USED trace 0-10%	AT	AFTER	HRS	
		- UNDISTURBED PISTON - OPEN END ROD V-WASH SAMPLE			10-29 Med.	Dense			little 10-20%	NOTE: Levels	may vary with season	al fluctuation and	

30 - 49 Very Dense 50+ Very Dense

A - AUGER SAMPLE

9-15 Stiff 18-30 Very Stiff 31+ Hard

some 20-35% and 35-50%

the degree of soil saturation when the boring was taken.

**CLIENT NORTHEAST ENGINEERS** Tel. (800) 535-3577 **BORING /** MIDDLETOWN R.I. RNVIRO-TECH WELL PROJECT R.I. AIR NATIONAL GUARD DRILLING. INC. LOG QUONSET POINT, R.I. 125 Tremont Street Rehoboth, MA 02769 C. SETTE BORING CASING SAMPLER CORE BARREL DRILLER M. PONTE **B-5** INSPECTOR NO. **HSA** SS 1 LINE & STA OFFSET SHEET TYPE 1.375 IN. 4.25 IN. 1 SIZE ID SUR.ELEV. OF **FEBRUARY 1, 2001** 140 LB. FILE HAMMER WT. START **FEBRUARY 1, 2001** 01014 HAMM, FALL 30 IN. NO. FINISH SAMPLE CLASSIFICATION DEPTH SAMPL REC / MOISTURE DENSITY STRAT. CHANGE AND REMARKS NO. DEPTH RANGE BLOW\$/6 FEET ON SAMPLER OR CONSIST Moist, brown, siity FINE TO COARSE SAND AND GRAVEL 0-2 17"/24" 6-7 S Medium Dense 8-10 5 S Wet, olive brown FINE SAND, some slit, trace coarse sand 2 20"/24" 1-1 Very 5-7 Loose 10 8"/24" S Wet, brown, FINE TO MEDIUM SAND, some silt Loose 10-12 5-4 1-1 15 Wet, brown, FINE TO COARSE SAND 15-17 8"/24" 1-1 \$ Medium 20-28 Dense 20' End of boring at 20' 20

PENETRATION RESISTANCE

140 lb, Wt. falling 30" on 2" O.D. Sampler

Cohesive Consistency

0-2 Very Soft

5-8 Med. Stiff

16-30 Very Stiff 31+ Hard

3-4 Soft

Cohesionless Density

5-9 Loose

0-4 Very Loose

10-29 Med. Dense

50+ Very Dense

30 - 49 Very Dense

**COLUMN A** 

PROPORTIONS USED

trace 0-10%

little 10-20%

some 20-35% and 35-50% ΑT

**GROUNDWATER OBSERVATIONS** 

NOTE: Levels may vary with seasonal fluctuation and

the degree of soil saturation when the boring was taken.

AFTER

AFTER

0 HRS

HRS

SAMPLE IDENTIFICATION

S - SPLIT SPOON

T - THIN WALL TUBE

O - OPEN END ROD

W - WASH SAMPLE

A - AUGER SAMPLE

U - UNDISTURBED PISTON

	<u></u>	>	Tel. (800) 535	-3577		1			CLIENT	NORTHEAST ENGINEERS
	7	•	` ,		•		BOR	ING /		MIDDLETOWN R.I.
	11	<u>'N</u>	VIRO-T RILLING				WE	ELL	/ PROJECT	R.I. AIR NATIONAL GUARD
		الا	125 Tremont		Ů.	/	LC	)G	'	QUONSET POINT, R.I.
	THE STATE OF THE S	}	Rehoboth, MA			1	\			
DRILLER			ETTE				BORING			CASING SAMPLER CORE BARREL
INSPECT		<u>M. I</u>	PONTE				NO.	<u>B-6</u>		HSA/NW SS
LINE & S SUR.ELE				OFFSET	<del></del>		SHEET	<u>1</u>		HSA/NW SS 5 IN./3.00 IN. 1.375 IN.
START	٠.	FEE	BRUARY 2, 2	001			FILE		HAMMER WT.	300 LB. 140 LB.
FINISH	,	FE	BRUARY 2, 2				NO.	01014	HAMM, FALL	24 IN. 30 IN.
DEPTH	COL	NO.	DEPTH RANGE FEET	SAMPLE REC / PEN	BLÓWS/6" ON SAMPLER	TYPE	MOISTURE DENSITY OR CONSIST	STRAT. CHANGE FEET		SAMPLE CLASSIFICATION AND REMARKS
		1	0'-2'	14"/24"	5-11	S	Medium		Dry, dark-brown, s	ilty FINE TO MEDIUM SAND, trace corase sand and
					10-8	<u> </u>	Dense		organics (FILL)	
	<u> </u>									
	<u> </u>					_				
5 _		<u> </u>		<u> </u>		ļ			4	
	<u> </u>	2	5'-7'	13"/24"	6-14	S	Dense		Dry brown, FINE To	O COARSE SAND
		-			18-15				4	,
						-			4	
		┼				-			-	•
10_	<del> </del> -	3 10'-12' 7"/24" 8-12				╁			386-4 -37 5 5	THE TO COADCE CAND
	<del> </del>	3 10'-12' 7"/24" 8-12 20-27				S	Dense		wet, olive brown, i	FINE TO COARSE SAND
		-		ļ	20-27	-			-	
	<b> </b>	-				<del> </del> -				
4.5	<del> </del>	+				<del>                                     </del>			-	
15_		4	15'-17'	20"/24"	11-5	s	Medium		Greenish-grav FIN	E TO MEDIUM SAND
	<del> </del>	+	19-11	20 /24	7-17	Ť	Dense		NOTE: Switched to	
		1			7-11		251,00			
		5	18'-20'	18"/24"	15-15	s	Dense		Greenish-gray FIN	E SAND, little-some silt
20		Ť			20-21					,
		6	23'-25'	7"/24"	18-20	s	Dense		Greenish-gray FIN	E SAND, little-some silt
25_	<u> </u>				20-19	<u> </u>			4	
			ļ	ļ					_	
		<u> </u>	{			╄			4	
	-	-		<u> </u>		-			4	
		7	28'-30'	9"/24"	7-9	S	Medium		Greenish-gray FIN	E SAND, little silt
30_	├	-	<u> </u>	<del> </del>	11-13	+	Dense		-	•
				-	<b></b>	-		<b> </b>	-	
	-	+		1		+		<b> </b>	1	
	-	-	221.251	4 40 10 40	20.00	s	Donna	<del>                                     </del>	Gray-brown FINE	SAND AND SILT
7.5	-	8	33'-35'	14"/24"	22-23 25-39	╁	Dense	1	_iotay-brown rive :	OVID VIED OIFT
35_	1-	_		<b> </b>	20-03	T		T	1	
		+	<del>                                     </del>	1		+			1	
		1		T		1				
		9	38'-40'	13"/24"	15-24	s	Very		Greenish-grav FIN	RE SAND, little-some silt
40		Ť		1	39-36	Ī	Dense			-
	SAN	IPLE	DENTIFICATIO	N	T	RAT	ION RESISTA	ANCE	COLUMN A	GROUNDWATER OBSERVATIONS
		PLIT SE			1		g 30° on 2° O.D. :	Sampler Consistency		AT 7 ft. AFTER 0 HRS
								ry Soft	PROPORTIONS USED	
	T - THIN WALL TUBE         Cohesionless Density           U - UNDISTURBED PISTON         0-4 Very Loose           O - OPEN END ROD         5-9 Loose           W - WASH SAMPLE         10-29 Med, Dens			Doro-	3-4 \$0 5.8 Ma	ft ed. Stiff	trace 0-10% little 10-20%	NOTE: Levels may vary with seasonal fluctuation and		
1	AA - A	MON S	ww.r.c		I IO-ZO MOO.	A 196	) OWE	w. Gui	1 10-2076	The same section and and united and account and

10-29 Med, Dense 30 - 49 Very Dense 50+ Very Dense

A - AUGER SAMPLE

9-15 Stiff 16-30 Very Stiff 31+ Hard

some 20-35% and 35-50%

the degree of soil saturation when the boring was taken.

	111/00	NY DF	Fel. (800) 535 VIRO-T RILLING 125 Tremont Rehoboth, MA	ECH G. IN	l C.		BOR WE LO		CLIENT NORTHEAST ENGINEERS MIDDLETOWN R.I. PROJECT R.I. AIR NATIONAL GUARD QUONSET POINT, R.I.  CASING SAMPLER CORE BARREL				
DRILLER			ETTE				BORING	Б.С		CASING	SAMPLER CORE BARRI		
INSPECTO	•	M. F	PONTE	OFFSET			NO. SHEET	B-6 2	TYPE	HSA/NW	SS		
SUR.ELEV				OFFICE			OF .	2		5 IN./3.00 IN.	1.375 IN.		
START			RUARY 2, 20				FILE		HAMMER WT.	300 LB.	140 LB.		
FINISH DEPTH		FEB	RUARY 2, 20	SAMPLE			NO. MOISTURE	01014 STRAT.	HAMM. FALL	24 IN. SAMPLE CLASSIS	30 IN.		
DEPIN	A	NO.	DEPTH RANGE	REC/	BLOWS/6"	TYPE	DENSITY OR CONSIST	CHANGE FEET		AND REMA	RKS		
			FEET	PEN	ON SAMPLER	-	OR CONSIST	FEET					
ŀ						-							
ŀ						-							
ŀ		40	401.451	7070.40	24.25	s	V		Mant dank aray Cil	T little fine cand			
45		10	43'-45'	7"/24"	21-25	3	Very Dense		Wet, dark-gray, Sil	LI, Hua ina sana			
45					30-30	-	Dense						
						-							
ŀ													
ŀ		11	48'-50'	0"/24"	19-22	s	Dense		No recovery				
50			40 -30	0 /24	26-23	3	Dense	501	END OF BORING	AT 50'			
30					20-23								
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	SAM	PI F I	DENTIFICATION	<u>.                                    </u>	PENET	RAT	ON RESISTA	NCE	COLUMN A	GROUND	WATER OBSERVATIONS		
	S-SPI	LIT SP	ООИ	-	140 lb. Wt.	falling	30" on 2" O.D. S	Sampler					
			IL TUBE RBED PISTON		Cohesionless De 0-4 Very Lo		Cohesive Co 0-2 Ver		ency AT AFTER				
	O-0P	EN EN	ID ROD		5-9 Loose		3-4 Sof	t	trace 0-10%				
					10-29 Med. I				l				
	~ - AU						. 3-10-50	m ∕ery Stiff	and 35-50%	THE WORK GO IN SOL			

		N	гы. (800) 53: /IRO-	LECH	Ļ		BOR WE			NORTHEAST E	R.I.	
		,	RILLING 125 Tremont	Street	U.	\	LC			QUONSET POI		
DRILLER	₩ ₩		Rehoboth, M ETTE	A 02769			BORING			CASING	SAMPLER	CORE BARREL
INSPECT	OR		ONTE				NO	B-7				
LINE & S SUR.ELE				OFFSET			SHEET OF	<u>1</u> 2	TYPE SIZE ID 4.2	HSA/NW 5 IN./3.00 IN.	SS 1.375 IN.	
START	**	FEB	RUARY 2, 2	.001			FILE		HAMMER WT.	300 LB.	140 LB.	
FINISH DEPTH	COL	FEB	RUARY 5, 2	SAMPLE			NO. MOISTURE	01014 STRAT.	HAMM, FALL	24 IN. SAMPLE CLASSI	30 IN.	
	A	NO.	DEPTH RANGE FEET		BLOWS/6" ON SAMPLER	TYPE		CHANGE FEET		AND REMA	ARKS	
		1	0'-2'	14"/24"	8-8	s	Medium		Dry, greenish-brov			ine to medium
					20-22	ļ	Dense		gravel and bitumin	ious concrete (FIL	L)	,
		$\left\  \cdot \right\ $				┼						
5		T				<del> </del>						
<b>-</b>		2	5'-7'	11"/24"	5-9	s	Medium		Wet, greenish-gray	FINE TO MEDIUM	A SAND, trace co	arse sand
					9-8		Dense		(FILL)			
						_			4			
						├			-			
10_		3	10'-12'	24"/24"	1-1	s	Very		Dry, dark brown Pl	FAT		
			10-12	24 /24	1-5	Ĭ	Loose			y, aan Diomirea i		
									]			
15_						-						
		4	15'-17'	24"/24"	2-2	S	Very		Wet, greenish-gray			ome silt
		-			2-5	├	Loose		NOTE: Switched to	NW casing at 18		
		5	18'-20'	10"/24"	10-10	s	Medium		Wet, greenish-gray	y FINE SAND, som	ne silt	
20			//		11-13		Dense			,		
						<u> </u>			_			
	<u> </u>		<u></u>	-		-						
	-		021.051	11"/24"	40.40	s	Medium		- Wet, greenish-gray	. CINE TO MEDIII	ia CAND Tittle.co	ma cilt
25		6	23'-25'	11 124	10-10 9-8	3	Dense		Javec, greenstr-gra	y FINE TO MEDIO	n sand, nue-so	ne sne
,												
						<u> </u>			4			
		7	28'-30'	13"/24"	8-7	s	Medium		Wet, greenish-gray	y FINE SAND, som	ne silt	
30	<del>                                     </del>	+			18-26	-	Dense		-			
		+-				1			-			
									]			
		8	33'-35'	12"/24"	6-8	s	Medium		Wet, olive-brown F	FINE SAND, some	silt	
35_		-		-	10-11	┼	Dense		-			
	<u></u>					+-			-			
	<del> </del>					+-						
		9	38'-40'	2"/24"	20-20	s	Very		Wet, olive-brown i	FINE SAND, some	silt	
40					33-20		Dense					
1			DENTIFICATIO	N	1		ION RESISTA		COLUMN A	GROUND	WATER OBSER	/ATIONS
	T - TH		L TUBE		Cohesioniess D	ensity		onsistency		AT _6ft		0 HRS
			RBED PISTON D ROD		0-4 Very L 5-9 Loose	oose	0-2 Ver 3-4 Sof	•	PROPORTIONS USED trace 0-10%	AT	AFTER	HRS
	W-W	ASH SA	MPLE		10-29 Med.		5-8 Me	d. Suff	little 10-20%	% NOTE: Levels may vary with seasonal fluctuation and		
	O - OPEN END ROD W - WASH SAMPLE A - AUGER SAMPLE			30 - 49 Very 50+ Very Do	Dense	e 9-15 SI 16-30 \ 31+ Ha	/ery Stiff	some 20-35% and 35-50%	the degree of so	e saturation when the I	onng was taken.	

	44	N' Di	VIRO-T RILLING 125 Tremont Rehoboth, M.			LC LC		PROJECT R.I. AIR NATIONAL GUARD  QUONSET POINT, R.I.  CASING SAMPLER CORE BARRE					
DRILLER INSPECT			PONTE				BORING NO.	B-7		CASING	SAMPLER CORE BARREL		
UNE & ST		141. F	OHIL	OFFSET			SHEET	2	TYPE I	HSA/NW	SS		
SUR.ELE							OF	2		IN./3.00 IN.	1.375 IN.		
START			RUARY 2, 2				FILE		HAMMER WT.	300 LB.	140 LB.		
FINISH		FEE	BRUARY 5, 2		<del> </del>		NO.	01014	HAMM. FALL	24 IN. SAMPLE CLASSII	30 IN.		
DEPTH	A	NO.	DEPTH RANGE FEET	SAMPLE REC/ PEN	BLOWS/6" ON SAMPLER	TYPE	MOISTURE DENSITY OR CONSIST	STRAT. CHANGE FEET		AND REMA	RKS		
		10	20"/24"	43'-45'	14-8	S			Wet, brown, FINE TO	O MEDIUM SAND	, trace coarse sand		
45					10-18		Dense						
		11	1"/24"	48'-48'1"	140/1"	s	Spoon	48' 1"	Wet, gray FINE SAN	ID same silt			
50		11	1 724	46 -46 1	140/1	3	Refusal	40 1	END OF BORING A				
									,				
,													
_													
						-					,		
	S-SP	LIT SP	DENTIFICATIO	N		. falling	ION RESISTA 30° on 2° O.D. S Cohesive C	Sampler					
			RBED PISTON		0-4 Very Lo		0-2 Ver		PROPORTIONS USED	AT	. AFTER 0 HRS AFTER HRS		
,	0-0	PEN EN	ID ROD		5-9 Loose		3-4 Sof	t	trace 0-10%		, , , , , , , , , , , , , , , , , , , ,		
						Dense	9-15 St	iff /ery Stiff	ittle 10-20%  NOTE: Levels may vary with seasonal fluctuation and the degree of soil saturation when the boring was taken.				

# Tel. (800) 535-3577

BORING /

**CLIENT NORTHEAST ENGINEERS** MIDDLETOWN R.I.

	47	DF	RILLING	G. IN	C.	1	VVE		PROJECT R.I. AIR NATIONAL GUARD					
			25 Tremont			1	LO	G	1	QUONSET POIN	IT, R.I.			
	<b>400</b>		Rehoboth, MA	02769		1	i		]					
DRILLER		c.s	ETTE				BORING			CASING	SAMPLER	CORE BARREL		
INSPECTO			ONTE				NO.	B-8						
UNE & ST	Ά			OFFSET			SHEET	1		HSA/NW_	SS			
SUR.ELE							OF	2	-1	5 IN./3.00 IN.	1.375 IN.			
START			RUARY 5, 20				FILE		HAMMER WT.	300 LB.	140 LB.			
FINISH DEPTH		FEB	RUARY 6, 20	JU1 SAMPLE			NO.	01014	HAMM, FALL	24 IN. SAMPLE CLASSIFI	30 IN.			
DEPIN		NO.	DEPTH RANGE	REC/		TYPE		STRAT. CHANGE		AND REMAR	KS			
			FEET	PEN	ON SAMPLER		OR CONSIST	FEET						
		1	0'-2'	13"/24"	6-12	S	Medium		Dry, brown, silty FI	INE TO COARSE SA	AND, little fine to	medium		
ļ					6-6		Dense		gravel (FILL)					
į									]					
ł									]			l		
5				,										
	-	2	5'-7'	17"/24"	4-5	s	Loose		Wet, greenish-brov	wn FINE SAND AND	SILT (FILL)	1		
					3-4				1		` ,	1		
1					U-7				1					
									1			- 1		
									1			1		
10_			401.461	001100411					68.1-4 3-3 5	DEAT				
		3	10'-12'	20"/24"	1-2	S	Loose		Moist, dark-brown	PEAI				
-					3-4							`		
												1		
15_									4					
		4	15'-17'	9"/24"	3-3	<u>s</u>	Loose		Wet, clive-brown FINE SAND, some silt					
					5-4				NOTE: Switched to	NW casing at 18'				
									_					
		5	18'-20'	20"/24"	8-10	\$	Medium		Wet, greenish-gray	FINE SAND, little	silt			
20_					10-18		Dense		_					
									]					
									]					
		6	23'-25'	7"/24"	17-17	s	Dense		Wet, olive-brown F	INE SAND, little-so	me coarse sand	and fine to		
25					20-25				medium gravel, tra	ice-little silt				
								~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~						
		7	28'-30'	8"/24"	6-10	s	Medium		Wet olive-brown F	INE TO COARSE S	AND trace-little	fine gravel.		
20		-	26 -30	0 124					trace silt	INC TO COARCE O	AITD, Gace-illic	inio giavoi,		
30_		$\vdash$			9-11		Dense		mace sin			İ		
		$\vdash$							1					
		$\vdash$							†					
		-	<b></b>			_			<b></b>	PARALIE	744	,		
		8	33'-35'	8"/24"	10-9	S	Medium		Wet, greenish-gray	y FINE SAND, some	silt			
35					7-10		Dense		-					
									-					
								· · · · · · · · · · · · · · · · · · ·	-					
						_			1			į		
		9	38'-40'	11"/24"	9-24	S	Very		Wet, gray FINE TO	COARSE SAND, s	ome silt, trace-lit	tie fine		
40					58-120		Dense		gravel					
			DENTIFICATION	1			ON RESISTAI		COLUMN A	GROUNDV	VATER OBSERV	ATIONS		
1	S-SPE				ł	-	30° on 2° O.D. Se			AT 6 ft.	AFTER	O HRS		
			L TUBE RBED PISTON		Cohesionless Der 0-4 Very Loc		Cohesive Co 0-2 Very		PROPORTIONS USED		AFTER	HRS		
	0-0P	EN EN	DROD		5-9 Loose		3-4 Soft		trace 0-10%		_			
	W-WA				10-29 Med. C		5-8 Med 9-15 Stit		little 10-20% some 20-35%		nay vary with seasonal saturation when the bo			
l	A-AU	JEK S/	wrlt		30 - 49 Very 1 50+ Very Der		16-30 V	ery Stiff	some 20-35% and 35-50%	use degree or sou!	SOURCE WINDS UND DE	HIN WOO LONGIL		
ì		GER SAMPLE			1		31+ Har	ď	1	l				

		N' DI	rel. (800) 535 VIRO-T RILLING 125 Tremont Rehoboth, M/	ECH G. IN	l C.		BOR WE LC	ING / LL DG	CLIENT NORTHEAST ENGINEERS MIDDLETOWN R.I. PROJECT R.I. AIR NATIONAL GUARD QUONSET POINT, R.I.
ORILLER NSPECT JNE & ST	OR A		PONTE	OFFSET			BORING NO. SHEET	B-8 2	CASING SAMPLER CORE BARREL TYPE <b>HSAINW SS</b>
UR.ELE TART INISH			RUARY 5, 20 RUARY 6, 20	001			OF FILE NO.		SIZE ID 4.25 IN./3.00 IN. 1.375 IN.  HAMMER WT. 300 LB. 140 LB.  HAMM. FALL 24 IN. 30 IN.
DEPTH	A A	NO.	DEPTH RANGE FEET	SAMPLE REC / PEN	BLOWS/6" ON SAMPLER	TYPE	MOISTURE DENSITY OR CONSIST	STRAT. CHANGE FEET	SAMPLE CLASSIFICATION AND REMARKS
45		10	43'-45'	8"/24"	109-74 45-58	s	Very Dense	45'	Wet, dark gray GRAVEL AND ROCK FRAGMENTS, some fine to coarse sand and silt
<u> </u>									END OF BORING AT 45'
50_									
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				***************************************					
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			· · · · · · · · · · · · · · · · · · ·						

SAMPLE IDENTIFICATION	PENETRATIO	N RESISTANCE	COLUMN A	GR	OUNDWAT	ER OBSERV	ATIONS
S - SPLIT SPOON	140 lb. Wt. failing 3	0" on 2" O.D. Sampler					
T - THIN WALL TUBE	Cohesioniess Density	Cohesive Consistency		AT		AFTER	HRS
U - UNDISTURBED PISTON	0-4 Very Loose	0-2 Very Soft	PROPORTIONS USED	ΑT		AFTER	HRS
O - OPEN END ROD	5-9 Loose	3-4 Soft	trace 0-10%				
W - WASH SAMPLE	10-29 Med. Dense	5-8 Med. Stiff	little 10-20%	NOTE:	Levels may v	rary with seasonal	fluctuation and
A - AUGER SAMPLE	30 - 49 Very Dense 50+ Very Dense	9-15 Stiff 16-30 Very Stiff 31+ Hard	some 20-35% and 35-50%	the degr	ee of soil satur	ration when the bo	ring was taken.

			Tei. (800) 535	-3577		ackslash			CLIENT	NORTHEAST ENGINEERS			
	NVIRO-TECH DRILLING, INC.						BORI	NG/	MIDDLETOWN R.I.				
							WE		PROJECT R.I. AIR NATIONAL GUARD  QUONSET POINT, R.I.				
· .							LO						
	网		125   remont Rehoboth, MA			\		•	-	Q00.102.1 0111,11			
DRILLER	77 1		ETTE		<del></del>		BORING			CASING SAMPLER CORE BARREL			
INSPECT			PONTE				NO.	B-9		30m2 30m2 20m2 20m2 20m2 20m2 20m2 20m2			
l .							SHEET	1	TYPE	HSA/NW SS			
SUR.ELE	· · · · · · · · · · · · · · · · · · ·						OF	2		25 IN./300 IN. 1.375 IN.			
START									HAMMER WT.	300 LB. 140 LB 24 IN. 30 IN.			
FINISH DEPTH	COL	FEBRUARY 16, 2001			-	NO. MOISTURE	STRAT.	HAMM. FALL	SAMPLE CLASSIFICATION				
	Α	NO.	DEPTH RANGE FEET	REC / PEN	BLOWS/6" ON SAMPLER	TYPE	DENSITY OR CONSIST	CHANGE FEET		AND REMARKS			
		1	0'-2'	16"/24"	4-8	s	Medium		Dry, tan, FINE SAN	ID, trace silt			
					8-13		Dense						
5													
		2	5'-7'	13"/24"	1-1	s	Very		Wet, greenish-grav	/ FINE SAND, some sift, trace coarse sand			
					2-5		Loose						
							`						
10_													
-		3	10'-12'	18"/24"	1-2	s	Loose		Moist, dark brown	PEAT			
					3-2					·			
									]	·			
15													
_		4	15'-17'	9"/24"	4-5	s	Medium		Wet, greenish-gray	y FINE TO MEDIUM SAND, some silt			
					8-6		Dense		NOTE: Switched to	NW casing at 18'			
1													
l		5	18'-20'	16"/24"	2-3	s	Loose		Wet, gray-brown S	ILT, possible organics			
20					5-9								
										,			
		6	23'-25'	10"/24"	6-7	s	Medium		Wet, gray-brown F	INE SAND AND SILT, trace medium-sand			
25_					7-8		Dense						
1			`										
			·			ļ							
1		7	28'-30'	9"/24"	5-7	s	Medium		Wet, gray-brown F	INE SAND, little-some silt, trace coarse sand			
30_				ļ	12-12	<u> </u>	Dense						
		<u> </u>				<u> </u>							
		<u> </u>											
1	<b></b>	_				<u> </u>	<u> </u>						
		8	33'-35'	14"/24"	5-14	s	Medium		Wet, gray, FINE To	O COARSE SAND AND GRAVEL			
35_	<u> </u>				11-11	<u> </u>	Dense						
	ļ					<u> </u>	<b>  </b>						
	<u></u>	<u> </u>				ļ	<b>  </b>			·			
							<b> </b>						
		9	38'-40'	14"/24"	6-16	s	Medium		1	INE TO COARSE SAND, little fine gravel, little			
40		<u> </u>			8-4	<u></u>	Dense		slit				
							ON RESISTAN 30" on 2" O.D. Sa		COLUMN A	GROUNDWATER OBSERVATIONS			
1 .	S - SPLIT SPOON						Cohesive Co			AT 6ft. AFTER 0 HRS			
1						ose	0-2 Very		PROPORTIONS USED	AT AFTER HRS			
						)ense	3-4 Soft 5-8 Med.		trace 0-10% little 10-20%	NOTE: Levels may vary with seasonal fluctuation and			
			AMPLE		30 - 49 Very	Dense	9-15 Stif	ŗ	some 20-35%	the degree of soil saturation when the boring was taken.			
1	50+ Very Dense						16-30 Ve 31+ Han		and 35-50%	Ŷ			

# Tel. (800) 535-3577 NVIRO-TECH

## BORING /

CLIENT NORTHEAST ENGINEERS MIDDLETOWN R.I.

	1		RILLIN(		C.	1	LO			R.I. AIR NA HO		
	125 Tremont Street Rehoboth, MA 02769					LO	G	QUONSET POINT, R.I.				
000150	, , ,		ETTE	4 02769		,	BORING			CASING	SAMPLER	CORE BARREL
DRILLER INSPECTO			ONTE				NO.	B-9		CASING	OAMPLEIC	CONE BARREE
LINE & ST				OFFSET			SHEET	2	TYPE	HSA/NW	SS	
SUR.ELE		<del></del>	DUADV 40 4	2004			OF	2	•	5 IN./3.00 IN.	1.375 IN.	
START FINISH			RUARY 12, 2 RUARY 16, 2				FILE NO.	01014	HAMMER WT. HAMM, FALL	300 LB. 24 IN.	140 LB. 30 IN.	
DEPTH	COL		DEPTH RANGE	SAMPLE	OLOMO CO		MOISTURE	STRAT.		SAMPLE CLASSII AND REMA	FICATION	
	Α	MO.	FEET	REC / PEN	BLOWS/6" ON SAMPLER	TYPE	OR CONSIST	CHANGE FEET		ANDITEMA		
												1
										•		
	·											
		10	43'-45'	18"/24"	3-12	S	Dense	•	Wet, gray, SILT, lit	tte fine sand		
45_					18-21							-
		$\vdash$										
		44	401 FO1	16"/24"	42.25	s	Mont		Wet, gray, SILT			
50_		11	48'-50'	16 124	12-26 32-61	3	Very Dense	50'	END OF BORING	ኒፓ ናበነ		
30_					02-01		Dense		LAD OF BOALING	.,		
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						ON RESISTA		COLUMN A	GROUND	WATER OBSERV	ATIONS	
	S - SPLIT SPOON 140 lb. Wt. falling T - THIN WALL TUBE Cohesionless Density							AT 6ft.	AFTER	OHRS		
	U - UNDISTURBED PISTON 0-4 Very Loose						0-2 Ver	y Soft	PROPORTIONS USED	AT	AFTER	HRS
		PEN EN ASH SA			5-9 Loose 10-29 Med. I	Dense	3-4 Sof 5-8 Med		trace 0-10% little 10-20%	NOTE: Levels	may vary with seasons	I fluctuation and
	A - AUGER SAMPLE 30 - 49 Very Dense 50+ Very Dense					Dense nse	se 9-15 Stiff 16-30 Very Stiff		some 20-35% and 35-50%	the degree of soi	I saturation when the b	oring was taken.

		N' DI	VIRO-T RILLING 125 Tremont Rehoboth, M	FECH G. IN	l G.		BOR WE LC	ING / LL OG	PROJECT R.I. All	HEAST ENGINEERS LETOWN R.I. R NATIONAL GUARD SET POINT, R.I.	
DRILLER			ONTE				BORING	B-10	CASIN	G SAMPLER CORE BARREL	
INSPECT LINE & S		ivi, r	ONIE	OFFSET	', ' <u>.</u> .		NO. SHEET	1	TYPE HSA	. ss	
SUR.ELE	SUR.ELEV.						OF	2	SIZE ID 4.25 1		
START		FEE	RUARY 16, : RUARY 16, :	2001	<del> </del>		FILE NO.	01014	HAMMER WT. HAMM, FALL	140 LB. 30 IN.	
FINISH DEPTH	COL.		······································	SAMPLE REC/			MOISTURE	STRAT.		PLE CLASSIFICATION	
	A	NO.	DEPTH RANGE FEET	PEN	BLÓWS/6" N ON SAMPLER	YPE	DENSITY OR CONSIST	CHANGE FEET		AND REMARKS	
		1	0'-2'	22"/24"	6-12	s	Medium		Dry, tan to brown FINE TO	MEDIUM SAND, trace coarse sand	
					14-16		Dense		(FILL)	-	•
											•
5_		2	5'-7'	20"/24"	2-3	<u> </u>	Loose		Wet, brown, FINE SAND, If	ttle to some sift (Fill I )	
		-	5-1	20 124	2-2	3	LOOSE		tios moun, rate oato, a	the to some sit to hair	
10_											
		3	10'-12'	20"/24"	3-5	S	Medium		Wet, dark brown, FINE SAI	ND, trace siit, organics, roots (FILL)	
					9-6		Dense				
15											
'3-	ļ	4	15'-17'	9"/24"	6-7	s	Medium		Wet. brown, FINE TO MED	IUM SAND, little coarse sand and fine	
		-	13 11	, , , , , , , , , , , , , , , , , , ,	10-16		Dense	·	gravel		•
20_	ļ										
		5	20'-22'	24"/24"	15-16	<u>s</u>	Dense		Wet, brown FINE TO COAF	RSE SAND, little - some fine gravel	
	<b> </b>	-			30-35					ł	
		<del> </del>	<u></u>								
25											
		6	25'-27'	8"/24"	10-9	s	Dense		Wet, gray SILT AND FINE	SAND	
					10-13						
	ļ			<u> </u>							
		-		<b> </b>							•
30_	<del> </del>	7	30'-32'	11"/24"	9-10	s	Medium		Wet, light brown FINE SAN	ID little-some silt	
		<del>                                     </del>	30-32	11.124	18-30	<u> </u>	Dense		rios ngus bromit rists OAN	- mio-ovino one	
								]		1	
										1	
35_	<u> </u>	<u> </u>									
		8	35'-37'	18"/24"	14-25	S	Very		Wet, gray, FINE SAND, so	me silt	
		-		<u> </u>	29-42		Dense	1		İ	
	-	1-		<del> </del>				1			
40		<del>                                     </del>		<del>                                     </del>				1			
	SAM	PLE	DENTIFICATIO	N	PENETI	TAS	ION RESISTA	NCE	COLUMN A	GROUNDWATER OBSERVATIONS	
	S-SP		OON LL TUBE		140 lb. Wt. 1 Cohesionless Dec	_	30° on 2° O.D. 5 Cohesive C		TA TA	6 ft AFTER 0 HRS	
	ย - ยก	DIST	RBED PISTON		0-4 Very Loc		0-2 Ve	ry Soft	PROPORTIONS USED AT		
			AD ROD AMPLE		5-9 Loose 10-29 Med. D	ense	3-4 So 5-8 Me	ft ed. Stiff	trace 0-10% little 10-20% NOT	TE: Levels may vary with seasonal fluctuation and	
			AMPLE		30 - 49 Very ( 50+ Very Den	Dense Ise	9-15 S 16-30 Y	tiff Very Stiff	some 20-35% the and 35-50%	degree of soil saturation when the boring was taken.	
<u></u>							31+ Ha	ed			

Tel. (800) 535-3577  ENVIRO-TECH DRILLING, INC.  125 Tremont Street Rehoboth, MA 02769							BOR WE LC	ING / LL )G	CLIENT NORTHEAST ENGINEERS  MIDDLETOWN R.I.  PROJECT R.I. AIR NATIONAL GUARD  QUONSET POINT, R.I.
RILLER			ETTE				BORING		CASING SAMPLER CORE BARREL
SPECT		M. F	ONTE	OFFSET			NO. SHEET	B-10 2	TYPE HSA SS
JR.ELE				•			OF	2	SIZE 10 4.25 IN. 1.375 IN.
TART			RUARY 16, 2 RUARY 16, 2				FILE	01014	HAMMER WT. 140 LB. HAMM. FALL 30 IN.
NISH EPTH				SAMPLE			NO. MOISTURE	STRAT.	HAMM. FALL 30 IN.  SAMPLE CLASSIFICATION AND REMARKS
	Α	NO.	DEPTH RANGE FEET	REC / PEN	BLOWS/6* ON SAMPLER	TYPE	DENSITY OR CONSIST	CHANGE FEET	AND REMARKS
		9	40'-42'	13"/24"	4-6	s	Medium		Wet, gray SILT, some fine sand
					14-17		Dense		
		-							
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45		-	AEI ACI	9"/12"	14-106	s	Very	46'	Wet, gray, SiLT
		10	45'-46'	3/14	14"(00	3	Dense	40	END OF BORING AT 46'
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		1							
	S - SF T - TF	PLIT SP HIN WAI	LL TUBE	N	140 lb. Wt. Cohesioniess De	falling nsity		Sampler consistency	COLUMN A GROUNDWATER OBSERVATIONS  AT 6 ft. AFTER 0 HRS  PROPORTIONS USED AT AFTER HRS
			RBED PISTON ID ROD		0-4 Very Lo 5-9 Loose	<b>9</b> 200	0-2 Ve 3-4 So	ry Soft ft	trace 0-10%
	W-W	VASH S	AMPLE AMPLE		10-29 Med. I 30 - 49 Very			ed. Stiff tiff	ittle 10-20% NOTE: Levels may vary with seasonal fluctuation and some 20-35% the degree of soil saturation when the boning was taken.
	A-A	טטטר ט	vanifue		50+ Very De	nse nse	16-30 ' 31+ Ha	Very Stiff	and 35-50%

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,		DI	Tel. (800) 535 VIRO-T RILLING 125 Tremont Rehoboth, M/	FECH G. IN	i C.		LC LC		PROJECT	NORTHEAST ENGINEERS MIDDLETOWN R.I. R.I. AIR NATIONAL GUARD QUONSET POINT, R.I.
DRILLER			ETTE PONTE				BORING NO.	B-11		CASING SAMPLER CORE BARREL
INSPECT LINE & S		171. [	ONIE	OFFSET			SHEET	1	TYPE	HSA SS
SUR.ELE				•			OF	1	SIZE ID	4.25 IN. 1.375 IN.
START			RUARY 12,				FILE	04044	HAMMER WT.	140 LB. 30 IN.
FINISH DEPTH	COL.	FEE	RUARY 12,	SAMPLE	· · · · · · · · · · · · · · · · · · ·		NO. MOISTURE	01014 STRAT.	HAMM. FALL	SAMPLE CLASSIFICATION
İ	Α	NO.	DEPTH RANGE FEET	REC / PEN	BLOWS/6" ON SAMPLER	TYPE	DENSITY OR CONSIST	CHANGE FEET		AND REMARKS
		1	0-2	8"/24"	6-6	s	Loose		Dry, tan to brown F	FINE TO MEDIUM SAND, trace coarse sand
					3-2				and fine gravel (Fil	ш)
5										
		2	5-7	9"/24"	4-5	\$	Loose		Wet, tan to olive be	rown FINE TO MEDIUM SAND, trace coarse
					4-5				sand and silt (FILL	.)
	ļ									
10						_				DE4.7
	<del> </del>	3	10-12	24"/24"	3-3	S	Loose		Moist, dark brown,	, PEA I
•	<b></b>				·3-3	_				
	<b></b>					-				
15										
13		4	15-17	24"/24"	5-12	s	Medium		Wet olive brown F	FINE SAND, trace silt
		7	17-11	24 /24	12-10		Dense	17'	END OF BORING	
20										
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	S-SPI T-THI U-UN	UT SP IN WAI DISTU	L TUBE RBED PISTON	N	140 lb. Wt. Cohesionless De 0-4 Very Lo	fallinç nsity	0-2 Ver	Sampler onsistency y Soft	COLUMN A  PROPORTIONS USED	GROUNDWATER OBSERVATIONS  AT 6 ft. AFTER 0 HRS AT AFTER HRS
İ			ID ROD AMPLE		5-9 Loose 10-29 Med. [	Dense	3-4 Sof 5-8 Med		trace 0-10% little 10-20%	NOTE: Levels may vary with seasonal fluctuation and
			AMPLE		30 - 49 Very 50+ Very De	Dense	9-15 St	itl /ery Stitl	some 20-35% and 35-50%	the degree of soil saturation when the boring was taken.

	<u> </u>	>	Tel. (800) 535	-3577					CLIENT	NORTHEAST ENGINEERS		
	+	) In I'	VIRO-T	-ECL	ı		BOR	ING /	MIDDLETOWN R.I.			
	H		RILLING	G. IN	Ċ.			LL		R.I. AIR NATIONAL GUARD		
			125 Tremont	Street	<b>-</b>	/	LC	)G	/ .	QUONSET POINT, R.I.		
<u> </u>	७७५		Rehoboth, MA	A 02769		,						
DRILLER INSPECT			SETTE PONTE				BORING NO.	B-12		CASING SAMPLER CORE BARREL		
LINE & S		101.	· • • • • • • • • • • • • • • • • • • •	OFFSET			SHEET	1	TYPE	HSASS		
SUR.ELE	V.			-			OF	1	SIZE ID	4.25 IN. 1.375 IN.		
START FINISH			3RUARY 12, 3 3RUARY 12, 3				FILE NO.	01014	HAMMER WT. HAMM. FALL	140 LB. 30 IN.		
DEPTH				SAMPLE	BLOWS/6"	WV00	MOISTURE	STRAT. CHANGE		SAMPLE CLASSIFICATION AND REMARKS		
	A	NO.	FEET	REC / PEN	ON SAMPLER	ΎРЕ	DENSITY OR CONSIST	FEET		AND REMARKS		
		1	0-2	18"/24"	5-5	s	Medium		Dry, tan to olive br	rown FINE TO MEDIUM SAND, trace coarse		
	ļ	<u> </u>			10-12		Dense		sand (FILL)			
	ļ											
_		-										
5 _		2	5-7	8"/24"	2-3	s	Loose		Wat tan to brown	FINE TO MEDIUM SAND, trace coarse sand		
		-	3-1	0 724	4-4	3	coose		(FILL)	THE TO HEDION ONED, MAD DOUGO DANA		
									,,			
10_												
	<u> </u>	3	10-12	6"/24"	2-2	s	Very		Moist, brown, PEA	T, some fine to coarse sand		
		_			2-2		Loose					
4.		$\vdash$										
15_	ļ	4	15-17	7"/24"	4-4	s	Loose		Wet alive brown F	FINE TO MEDIUM SAND, trace-little silt		
		<del>  •</del>	13-17	7 724	5-5	3	1.0036	17'	END OF BORING			
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	SAMPLE IDENTIFICATION PENETRAT S - SPLIT SPOON 140 lb. Wt. feltin				ION RESISTA 30" on 2" O.D. S		COLUMN A	GROUNDWATER OBSERVATIONS				
			LL TUBE JRBED PISTON		Cohesioniess De 0-4 Very Lo		Cohesive C 0-2 Ver		PROPORTIONS USED	AT 6ft. AFTER 0 HRS AT AFTER HRS		
	0-0	PEN EI	ND ROD		5-9 Loose		3-4 Sol	ft	trace 0-10%			
			AMPLE SAMPLE		10-29 Med, E 30 - 49 Very				little 10-20% some 20-35%	NOTE: Levels may vary with seasonal fluctuation and the degree of soil saturation when the boring was taken.		
	70				50+ Very Der			Very Stiff	and 35-50%			

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1		•	Fel. (800) 535	-3577					/ CLIENT		r engineers	
1	-	) 28. 27	/IBO 3	CECL	•		ROK	ING /	- /	MIDDLETON	/N R.I.	
	H		VIRO-1 RILLING		C:		WE	LL.	/ PROJECT	R.I. AIR NAT	IONAL GUARD	
1			125 Tremont		<b>.</b>	- /	LC	)G		QUONSET P	OINT, R.I.	
			Rehoboth, M			1	1		/			
DRILLER	₹	C, S	ETTE			•	BORING			CASING	SAMPLER	CORE BARREL
INSPEC			PONTE				NO.	B-13				
UNE & S	TA			OFFSET			SHEET	1	TYPE	HSA	SS	
SUR.ELE	V.						OF	11	SIZE ID	4.25 IN.	1.375 IN.	
START			RUARY 12, 1 RUARY 12, 1		*		FILE	04044	HAMMER WT.		140 LB. 30 IN.	
FINISH DEPTH	COL	FEE	RUART 12,	SAMPLE	<del></del>		NO. MOISTURE	01014 STRAT.	HAMM. FALL	SAMPLE CLAS	SSIFICATION	
	A	NO.	DEPTH RANGE FEET	REC / PEN	BLOWS/6" ON SAMPLER	TYPE	DENSITY OR CONSIST	CHANGE FEET		AND RE	MARKS	
<b> </b>	<del> </del>	1	0-2	13"/24"	8-12	s	Medium	1001	Day brown FINE	TO MEDITIM SAF	ND, trace coarse sa	nd and eilt
1	<b> </b>		U-2	13 124		3			Dry, brown, rine	TO MEDIUM SAL	ND, trace coarse sa	iu anu siii
					15-23	-	Dense					
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1		2	5-7	11"/24"	3-4	S	Medium		Wet, gray-brown i	FINE SAND, trac	e silt and coarse sa	nd
	<u></u>				6-6		Dense					
1												
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ł		3	10-12	24"/24"	2-3	S	Loose		Moist, dark brown	PEAT, some fin	ie sand	
1					4-4							
1												
1												
15												
.		4	15-17	16"/24"	6-9	s	Medium		Wet, gray-brown I	FINE SAND, som	ie silt	
1				·	12-13		Dense	17'	END OF BORING	AT 17'		
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			DENTIFICATION	N .	1		ION RESISTA		COLUMN A	GROUN	NDWATER OBSERV	ATIONS
	S-SP		L TUBE	*	140 lb. Wt. Cohesionless De	_	30° on 2° O.D. S Cohesive Co	•		AT 6	ft. AFTER	0 HRS
	U - UN	DISTU	RBED PISTON		0-4 Very Lo	<del> </del>	0-2 Ver	y Soft	PROPORTIONS USED		AFTER	HRS
		EN EN ASH SA	D ROD		5-9 Loose 10-29 Med. E	<b>\0.0</b> 00.0	3-4 Soft 5-8 Mex		trace 0-10% little 10-20%	NOTE: 12	els may vary with seasona	I fluctuation and
1		~	wrot take		to so want		J-O MEX	a. Cuii	A100 10-2070	, 1101th L6V	www.incip.itom.h.mingi.ge.gg.20Ug	

30 - 49 Very Dense 50+ Very Dense

A - AUGER SAMPLE

9-15 Stiff 16-30 Very Stiff 31+ Hard

some 20-35% and 35-50%

NOTE: Levels may vary with seasonal fluctuation and

the degree of soil saturation when the boring was taken.

# Tel. (800) 535-3577 NVIRO-TECH DRILLING, INC

### BORING / WELL LOG

CLIENT NORTHEAST ENGINEERS
MIDDLETOWN R.I.
PROJECT R.I. AIR NATIONAL GUARD

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	, est		125 Tremont	Street	_	1	LO	<b>)</b> G	/	QUONSET PO	INT, R.I.	
	800		Rehoboth, M			1	1		<i>-</i>			<u> </u>
DRILLER		C. S	ETTE				BORING			CASING	SAMPLER CO	RE BARREL
INSPECT			ONTE				NO.	B-14				1
LINE & ST	ГА			OFFSET			SHEET	1	TYPE	HSA	SS	
SUR.ELE							OF	1	SIZE IO	4.25 IN.	1.375 IN.	
START							FILE		HAMMER WT.		140 LB.	
FINISH							NO.	01014	HAMM. FALL		30 IN.	
DEPTH			SCOVIL SANIOE	SAMPLE	BLOWS/6*	HVD	MOISTURE DENSITY	STRAT. CHANGE		SAMPLE CLASS AND REM		
	Α	NO.	DEPTH RANGE FEET	REC / PEN	ON SAMPLER	TYPE	OR CONSIST	FEET		ANDINEM	AIVO	
		1	0'-2'	13"/24"	4-11	s	Dense		Dry, gray-brown, Fi	NE TO MEDIUM	SAND, little-some silt,	trace-
			<u> </u>	10 /2.4	20-31	Ť			little coarse sand a			
					20-31	<del> </del>	<b> </b>		illue coarse sand a	ing title to coarse	graver (rict)	
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		2	5'-7'	22"/24"	3-3	s	Medium		Moist, gray ORGAN	IIC SILT, trace fir	ne sand	
					5-2		Stiff		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	•		l
	-				J-L		Jun					1
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10						<u> </u>						1
		3	10'-12'	23"/24"	1-1	S	Very		Wet, olive brown FI	NE SAND, some	silt, trace - little media	ım sand
					1-2		Loose					
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15						-						İ
		4	15'-16' 6"	14"/24"	12-18	S	Very		1		SAND AND GRAVEL	
					70	<u> </u>	Dense	16' 6"	END OF BORING A	T 16' 6"		1
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		<u> </u>	DENTIFICATION	<u> </u>	DE115-	D 4 T	ION PERIOTA	NCE	COLUMN A	COOLEY	OWATER OBSERVATION	ONS
	SAM!		DENTIFICATION	Y			ION RESISTA 1 30° on 2° O.D. S		COLUMNA	GRUUNI	MINANIER ODSERVALII	y.110
			L TUBE		Cohesioniess De		•			AT 6 f	t_ AFTER	0 HRS
			RBED PISTON		0-4 Very Lo	<del></del>	0-2 Ver		PROPORTIONS USED	AT	AFTER	HRS
į			D ROD		5-9 Loose	<b>.</b> .	3-4 Sof		trace 0-10%	MOTO	a marriage de accesso de la	unting and
			MPLE		10-29 Med.				little 10-20% some 20-35%		s may vary with seasonal fluct oil saturation when the boring	
	A-AU	oek S	AMPLE	,	30 - 49 Very 50+ Very De	UKATISA Kase		nt /ery Stiff	some 20-35% and 35-50%	una de Chara	on contractors assess the recipied.	nus tanoti

# Tel. (800) 535-3577 NVIRO-TECH

CLIENT NORTHEAST ENGINEERS MIDDLETOWN R.I.

PROJECT R.I. AIR NATIONAL GUARD

		DRILLING, INC. 125 Tremont Street				1	LC	G	-	QUONSET PO		·
			125 i remont Rehoboth, MA			/			-	<del>aconoli i c</del>	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
DRILLER			ETTE				BORING	<del></del>		CASING	SAMPLER	CORE BARREL
INSPECT			PONTE				NO.	B-15				
UNE & S				OFFSET			SHEET	1	TYPE	HSA	SS	
SUR.ELE START	V.	FEE	RUARY 12, 2	2004			OF FILE	1	SIZE ID HAMMER WT.	4.25 IN.	1.375 IN. 140 LB.	
FINISH			RUARY 12, 2				NO.	01014	HAMM. FALL		30 IN.	
DEPTH	COL A	NO.	DEPTH RANGE	SAMPLE REC/	8LOWS/6"	TYPE	MOISTURE DENSITY	STRAT. CHANGE		SAMPLE CLASS AND REM	SIFICATION JARKS	
			FEET	PEN	ON SAMPLER		OR CONSIST	FEET		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
		1	0-2	11"/24"	6-10	s	Dense		Dry, brown, FINE T	O MEDIUM SAN	D, trace - little coa	rse sand and
					17-20				fine gravel (FILL)			`
_												
5		2	5-7	12"/24"	5-7	s	Medium		Dry, tan, FINE TO N	AEDII IM CAND		
		-	3-7	12 124	10-12	3	Dense		Dry, can, Fine To h	ILDIUM SAND		
					10-12		Delise					
										-		
10												
		3	10-12	22"/24"	19-45	s	Very		Wet, tan, FINE SAN	ID .		
			<del></del>	<del></del>	56-62		Dense		<i>'</i>			
15						_						
4		4	15-17	24"/24"	4-7	S	Medium	17'	Wet, tan, FINE SAN END OF BORING A			
					7-9		Dense		END OF BORING A	11.17		
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	SAMI	PLE	DENTIFICATION		PENETI	ATI	ON RESISTA	NCE	COLUMN A	GROUNI	OWATER OBSERV	ATIONS
	S-SPI		OON L TUBE		140 lb. Wt. 1 Cohesioniess Der	-	30" on 2" O.D. S Cohesive Co	•		AT · 7 f	t. AFTER	0 HRS
			RBED PISTON		0-4 Very Loc		0-2 Ven		PROPORTIONS USED	AT	AFTER	HRS
	0 - OP W - W/		DROD MPLE		5-9 Loose 10-29 Med. D	ense	3-4 Soft 5-8 Med		trace 0-10% little 10-20%	NOTE: Level	s may vary with seasons	al fluctuation and
			AMPLE		30 - 49 Very [	ense	9-15 Sti	ff	some 20-35%		oil saturation when the b	,
					50+ Very Den	\$ <b>8</b>	16-30 V 31+ Ha	'ery Stiff rd	and 35-50%			

#### **CLIENT NORTHEAST ENGINEERS** Tel. (800) 535-3577 **BORING** / MIDDLETOWN R.I. RNVIRO-TECH WELL PROJECT R.I. AIR NATIONAL GUARD DRILLING, INC. LOG QUONSET POINT, R.I. 125 Tremont Street Rehoboth, MA 02769 C. SETTE SAMPLER CORE BARREL CASING DRILLER BORING M. PONTE NO. B-16 INSPECTOR HSA LINE & STA OFFSET SHEET TYPE 1 4.25 IN. 1.375 IN. SIZE 1D SUR.ELEV. OF. 300 LB. **FEBRUARY 12, 2001** 140 LB. START FILE HAMMER WT. **FEBRUARY 12, 2001** 01014 24 IN. 30 IN. HAMM. FALL FINISH NO. MOISTURE DENSITY OR CONSIST STRAT, CHANGE SAMPLE CLASSIFICATION DEPTH COL DEPTH RANGE AND REMARKS NO. BLOWS/6 REC / ON SAMPLER FEET PEN FEET Dry, olive brown, FINE TO MEDIUM SAND, little-some coarse sand 1 0-2 4"/24" 9-24 S Very 26-24 Dense and fine to medium gravel (FILL) 5 Dry, tan, FINE TO MEDIUM SAND, trace coarse sand S 5-7 8"/24" 8-6 Medium 5-7 Dense 10 S 20"/24" Loose Wet, tan, FINE SAND, little silt 10-12 3-4 3-3 15 Wet, tan, FINE SAND, little silt 6"/24" S 15-17 1-1 Very END OF BORING AT 17' 1-2 Loose 17' 20

**GROUNDWATER OBSERVATIONS COLUMN A SAMPLE IDENTIFICATION PENETRATION RESISTANCE** S - SPUT SPOON 140 lb. Wt. falling 30" on 2" O.D. Sampler Cohesive Consistency **AFTER** HRS T - THIN WALL TUBE **Cohesionless Density** AT PROPORTIONS USED **AFTER** U - UNDISTURBED PISTON 0-4 Very Loose 0-2 Very Soft AT O - OPEN END ROD 3-4 Soft trace 0-10% 5-9 Loose 10-29 Med. Dense 5-8 Med. Stiff little 10-20% NOTE: Levels may vary with seasonal fluctuation and W-WASH SAMPLE the degree of soil saturation when the boring was taken. 30 - 49 Very Dense 50+ Very Dense 9-15 Stiff some 20-35% A - AUGER SAMPLE 16-30 Very Stiff and 35-50%

31+ Hard

42 VALLEY ROAD, MIDDLETOWN, RHODE ISLAND 02842 PH.: (401) 849 - 0810 FAX: (401) 846 - 4169

Project: RI Air National Guard

Date Sampled: 1/25/01

Boring #: B1-S1

Calculated By: MDP

Project Number: 01005.0

Date Tested: 2/28/01

Test #: 1

Checked By:

# **PARTICLE-SIZE ANALYSIS: ASTM D-422**

Description of soil: fine to med sand

Location: Hanger

#### Part A: COARSE SIEVE ANALYSIS

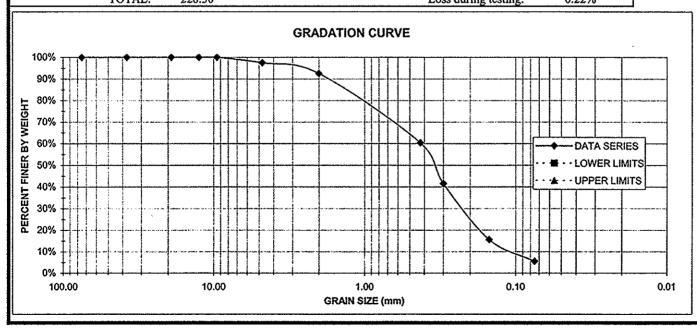
Weight of oven dry sample: 247.1

Sieve	Sieve Open. (mm)	Grams Ret. (g)	Grams Pass. (g)	Percent pass. of whole samp.	Percent ret. of whole samp
3"	75.00	0	247.10	100.00%	0.00%
1-1/2"	37.50	0.00	247.10	100.00%	0.00%
3/4"	19.00	0.00	247.10	100.00%	0.00%
1/2"	12.50	0.00	247.10	100.00%	0.00%
3/8"	9.50	0.00	247.10	100.00%	0.00%
#4	4.75	6.10	241.00	97.53%	2.47%
#10	2.00	12.20	228.80	92.59%	7.41%
PAN	0.00	228.80	***************************************		
	TOTAL:	247.10		Loss during testing:	0.00%

#### Part B: FINE SIEVE ANALYSIS

Weight of oven dry cample.

	W Cigitt Of OV	chi dry sampic.	220.0			
Sieve	Sieve	Grams	Grams	Percent Pass.	Percent Pass.	Percent Ret.
	Opening (mm)	Ret. (g)	Pass. (g)	of fine samp.	of whole samp.	of whole samp.
#40	0.425	79.20	149.10	65.17%	60.34%	39.66%
#50	0.3	46.40	102.70	44.89%	41.56%	58.44%
#100	0.15	64.10	38.60	16.87%	15.62%	84.38%
#200	0.075	25.00	13.60	5.94%	5.50%	94.50%
PAN	0	13.60				and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and t
	TOTAL	228.30		THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS	Loss during testing:	0.22%



42 VALLEY ROAD, MIDDLETOWN, RHODE ISLAND 02842 PH.: (401) 849 - 0810 FAX: (401) 846 - 4169

Project: RI Air National Guard

Date Sampled: 1/25/01

Boring #: B1-S4 Calculated By: MDP Project Number: 01005.0

Date Tested: 2/28/01 Test #: 1

Checked By:

# PARTICLE-SIZE ANALYSIS: ASTM D-422

Description of soil: fine sand, little silt

Location: Hanger

#### Part A: COARSE SIEVE ANALYSIS

Weight of oven dry sample:

289.9

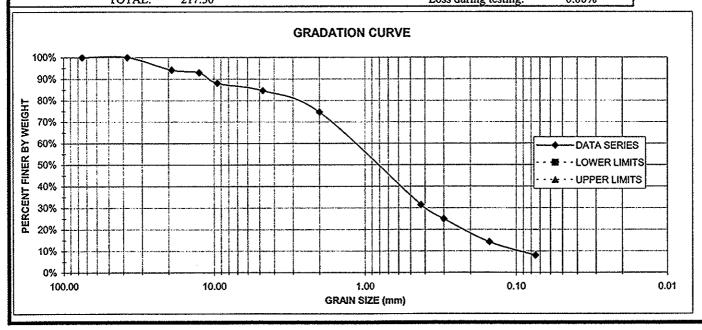
Sieve	Sieve	Grams	Grams	Percent pass.	Percent ret.
	Open. (mm)	Ret. (g)	Pass. (g)	of whole samp.	of whole samp.
3"	75.00	0	289.90	100.00%	0.00%
1-1/2"	37.50	0.00	289.90	100.00%	0.00%
3/4"	19.00	16.90	273.00	94.17%	5.83%
1/2"	12.50	3.60	269.40	92.93%	7.07%
3/8"	9.50	14.10	255.30	88.06%	11.94%
#4	4.75	9.90	245.40	84.65%	15.35%
#10	2.00	29.20	216.20	74.58%	25.42%
PAN	0.00	217.50	ONE - AND AND AND AND AND AND AND AND AND AND		TO THE THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN
Marian Branchistian Maria 21 Maria 34 M	TOTAL:	291.20	THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON NAMED IN COLUMN TO A PARTY	Loss during testing:	-0.45%

#### Part B: FINE SIEVE ANALYSIS

Weight of oven dry sample:

217.5

	11 025226 02 011	our dry builtiple.	. 22710			
Sieve	Sieve	Grams	Grams	Percent Pass.	Percent Pass.	Percent Ret.
	Opening (mm)	Ret. (g)	Pass. (g)	of fine samp.	of whole samp.	of whole samp.
#40	0.425	126.50	91.00	41.84%	31.39%	68.61%
#50	0.3	18.70	72.30	33.24%	24.94%	75.06%
#100	0.15	31.00	41.30	18.99%	14.25%	85.75%
#200	0.075	18.10	23.20	10.67%	8.00%	92.00%
PAN	0	23.20				
	TOTAL	217.50			Loss during testing	0.00%



42 VALLEY ROAD, MIDDLETOWN, RHODE ISLAND 02842 PH.: (401) 849 - 0810 FAX: (401) 846 - 4169

Project: RI Air National Guard

Project Number: 01005.0

Date Sampled: 1/25/01

Date Tested: 2/28/01

Boring #: B1-S7

Test #: 1

Calculated By: MDP

Checked By:

# PARTICLE-SIZE ANALYSIS: ASTM D-422

Description of soil: fine sand, trace silt

Location: Hanger

#### Part A: COARSE SIEVE ANALYSIS

Weight of oven dry sample:

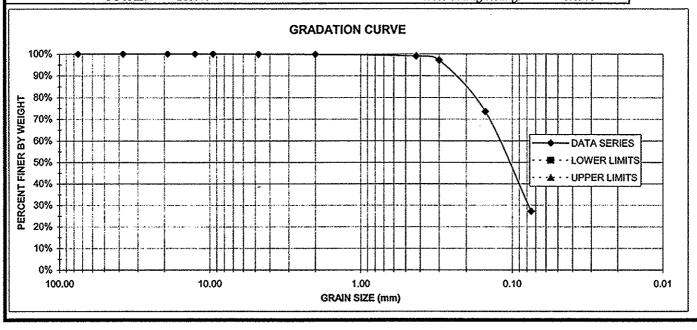
215.4

Sieve	Sieve	Grams	Grams	Percent pass.	Percent ret.
	Open. (mm)	Ret. (g)	Pass. (g)	of whole samp.	of whole samp
3"	75.00	0	215.40	100.00%	0.00%
1-1/2"	37.50	0.00	215.40	100.00%	0.00%
3/4"	19.00	0.00	215.40	100.00%	0.00%
1/2"	12.50	0.00	215.40	100.00%	0.00%
3/8"	9.50	0.00	215.40	100.00%	0.00%
#4	4.75	0.20	215.20	99.91%	0.09%
#10	2.00	0.20	215.00	99.81%	0.19%
PAN	0.00	215.00			
* Normality is contained the second and second and second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second	TOTAL:	215.40	and the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second s	Loss during testing:	0.00%

#### Part B: FINE SIEVE ANALYSIS

Weight of oven dry sample: 215.0

Sieve	Sieve	Grams	Grams	Percent Pass.	Percent Pass.	Percent Ret.
	Opening (mm)	Ret. (g)	Pass. (g)	of fine samp.	of whole samp.	of whole samp.
#40	0.425	2.10	213.30	99.21%	99.03%	0.97%
#50	0.3	4.00	209.30	97.35%	97.17%	2.83%
#100	0.15	51.00	158.30	73.63%	73.49%	26.51%
#200	0.075	99.70	58.60	27.26%	27.21%	72.79%
PAN	0	58.60				
	TOTAL:	215.40	THE PERSON OF THE MEMORY OF THE PROPERTY WHEN THE	AND THE PERSON NAMED IN COLUMN STREET, WHITE STREET, WHITE STREET, WAS A STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE STREET, WHITE	Loss during testing:	-0.19%



42 VALLEY ROAD, MIDDLETOWN, RHODE ISLAND 02842 PH.: (401) 849 - 0810 FAX: (401) 846 - 4169

Project: RI Air National Guard

Project Number: 01005.0

Date Sampled: 2/2/01

Date Tested: 2/28/01

Boring #: B6-S2

Test #: 1

Calculated By: MDP

Checked By:

# PARTICLE-SIZE ANALYSIS: ASTM D-422

Description of soil: fine to coarse sand

Location: Hanger

#### Part A: COARSE SIEVE ANALYSIS

Weight of oven dry sample:

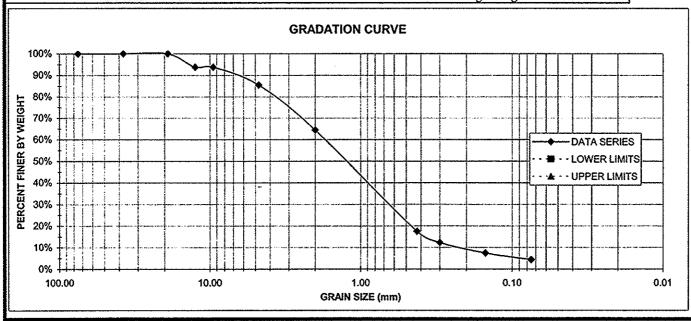
280.2

Sieve	Sieve Open. (mm)	Grams Ret. (g)	Grams Pass. (g)	Percent pass. of whole samp.	Percent ret. of whole samp
3"	75.00	0	280.20	100.00%	0.00%
1-1/2"	37.50	0.00	280.20	100.00%	0.00%
3/4"	19.00	0.00	280.20	100.00%	0.00%
1/2"	12.50	17.30	262.90	93.83%	6.17%
3/8"	9.50	0.00	262.90	93.83%	6.17%
#4	4.75	23.20	239.70	85.55%	14.45%
#10	2.00	59.20	180.50	64.42%	35.58%
PAN	0.00	180.50	to all wide to 3 to 3 to 10 to 600 doors about manage all besteel and with an in-		
	TOTAL:	280.20	T COMMON I COMMISSION COMMON COMMON AND THE PARTY OF THE PROPERTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF T	Loss during testing:	0.00%

#### Part B: FINE SIEVE ANALYSIS

Weight of oven dry sample: 180.5

Sieve	Sieve	Grams	Grams	Percent Pass.	Percent Pass.	Percent Ret.	
	Opening (mm)	Ret. (g)	Pass. (g)	of fine samp.	of whole samp.	of whole samp.	
#40	0.425	131.40	49.10	27.20%	17.52%	82.48%	
#50	0.3	14.80	34.30	19.00%	12.24%	87.76%	
#100	0.15	13.60	20.70	11.47%	7.39%	92.61%	
#200	0.075	8.60	12.10	6.70%	4.32%	95.68%	
PAN	0	12.10					
TOTAL: 180.50 Loss during testing: 0.00%							



42 VALLEY ROAD, MIDDLETOWN, RHODE ISLAND 02842 Ph.: (401) 849 - 0810 FAX: (401) 846 - 4169

Project: RI Air National Guard

Project Number: 01005.0

Date Sampled: 2/2/01

Date Tested: 2/28/01

Boring #: B7- S8

Test #: 1

Calculated By: MDP

Checked By:

# **PARTICLE-SIZE ANALYSIS: ASTM D-422**

Description of soil: fine sand, some silt

Location: Hanger

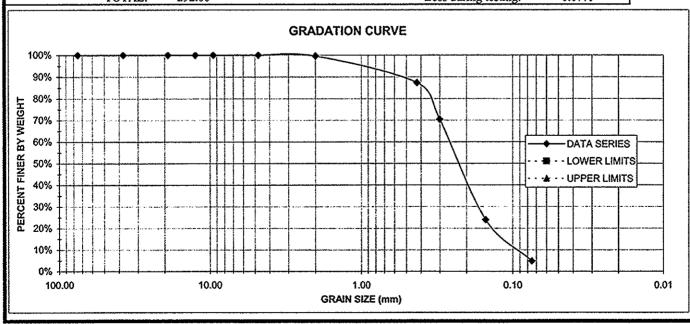
#### Part A: COARSE SIEVE ANALYSIS

Weight of oven dry sample:

Sieve	Sieve Open. (mm)	Grams Ret. (g)	Grams Pass. (g)	Percent pass. of whole samp.	Percent ret. of whole samp
3"	75.00	0	293.40	100.00%	0.00%
1-1/2"	37.50	0.00	293.40	100.00%	0.00%
3/4"	19.00	0.00	293.40	100.00%	0.00%
1/2"	12.50	0.00	293.40	100.00%	0.00%
3/8"	9.50	0.00	293.40	100.00%	0.00%
#4	4.75	0.00	293.40	100.00%	0.00%
#10	2.00	1.20	292.20	99.59%	0.41%
PAN	0.00	292.20			
******	TOTAL:	293,40		Loss during testing:	0.00%

#### **Part B: FINE SIEVE ANALYSIS**

	weight of ove	en ary sample:	292.2			
Sieve	Sieve	Grams	Grams	Percent Pass.	Percent Pass.	Percent Ret.
i de	Opening (mm)	Ret. (g)	Pass. (g)	of fine samp.	of whole samp.	of whole samp.
#40	0.425	35.70	256.30	87.71%	87.36%	12.64%
#50	0.3	49.70	206.60	70.70%	70.42%	29.58%
#100	0.15	136.20	70.40	24.09%	23.99%	76.01%
#200	0.075	56.20	14.20	4.86%	4.84%	95.16%
PAN	0	14.20				
	TOTAL	292.00			Loss during testing:	0.07%



42 VALLEY ROAD, MIDDLETOWN, RHODE ISLAND 02842 PH.: (401) 849 - 0810 FAX: (401) 846 - 4169

Project: RI Air National Guard

Project Number: 01005.0

Date Sampled: 2/16/01

Date Tested: 2/28/01

Boring #: B9-S6

Test #: 1

Calculated By: MDP

Checked By:

# PARTICLE-SIZE ANALYSIS: ASTM D-422

Description of soil: fine sand and silt

Location: Hanger

#### Part A: COARSE SIEVE ANALYSIS

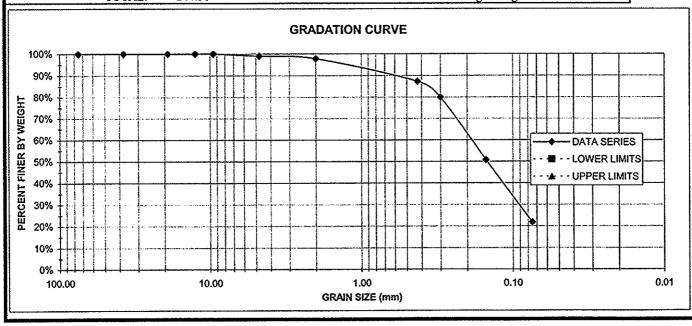
Weight of oven dry sample:

Sieve	Sieve Open. (mm)	Grams Ret. (g)	Grams Pass. (g)	Percent pass. of whole samp.	Percent ret. of whole samp
3"	75.00	0	250.10	100.00%	0.00%
1-1/2"	37.50	0.00	250.10	100.00%	0.00%
3/4"	19.00	0.00	250.10	100.00%	0.00%
1/2"	12.50	0.00	250.10	100.00%	0.00%
3/8"	9.50	0.00	250.10	100.00%	0.00%
#4	4,75	2.50	247.60	99.00%	1.00%
#10	2.00	3.10	244.50	97.76%	2.24%
PAN	0.00	245.00			
and a debased to second a second	TOTAL:	250.60	**************************************	Loss during testing:	-0.20%

#### Part B: FINE SIEVE ANALYSIS

Weight of oven dry sample:

	" orgin or ore	ni dry odznipio.	217.0			
Sieve	Sieve	Grams	Grams	Percent Pass.	Percent Pass.	Percent Ret.
Í	Opening (mm)	Ret. (g)	Pass. (g)	of fine samp.	of whole samp.	of whole samp.
#40	0.425	26.10	218.40	89.14%	87.33%	12.67%
#50	0.3	18.60	199.80	81.55%	79.89%	20.11%
#100	0.15	72.80	127.00	51.84%	50.78%	49.22%
#200	0.075	72.50	54.50	22.24%	21.79%	78.21%
PAN	0	54.50				
- and an analysis of the second	TOTAL:	244.50	· Carles ( A) · Carles ( A)		Loss during testing:	0.20%



42 VALLEY ROAD, MIDDLETOWN, RHODE ISLAND 02842 PH.: (401) 849 - 0810 FAX: (401) 846 - 4169

Project: RI Air National Guard

Project Number: 01005.0

Date Sampled:

Date Tested:

Sample #: B 13, 0 to 3 feet

Test #: 1

Calculated By: MDP

Checked By:

# **MODIFIED PROCTOR COMPACTION - ASTM D-1557**

Description of soil: Dark gray silty sand w / gravel

Date Sampled:

Location: Proposed parking lot

Number of Layers: 5

Weight of Hammer: 10 lbf

No. of Blows per Layer: 25

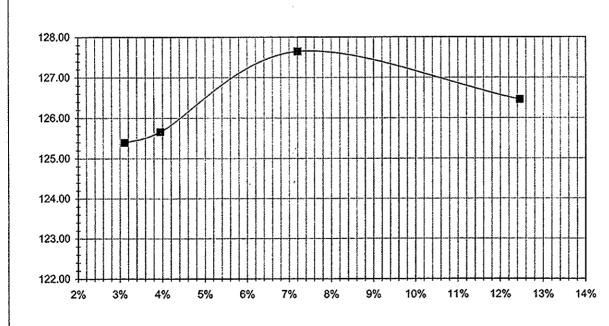
Procedure: A

				1000000		
Test#	Weight of	Weight of	Weight of	Moist unit	Moisture	Dry Unit
	Mold, W1 (g)	mold & moist	moist soil	weight,	Content,	Weight,
		soil (g)	(g)	(lb/ft <sup>3</sup> )	(%)	(lb./ft <sup>3</sup> )
1	4,230.00	6,183.00	1,953.00	129.30	3.11%	125.39
2	4,230.00	6,203.00	1,973.00	130.62	3.95%	125.66
3	4,230.00	6,297.00	2,067.00	136.85	7.21%	127.65
4	4,230.00	6,378.00	2,148.00	142.21	12.46%	126.46
5						

# **MOISTURE CONTENT DETERMINATION**

Can Number	1 .,	., 2	3	4	5
Weight of can, g.	304.50	293.20	305.90	297.30	
Weight of Moist Soil & can, g.	715.00	879.80	857.90	857.00	
Weight of Dry Soil & can, g.	702.60	857.50	820.80	795.00	
Moisture Content, %	3.11%	3.95%	7.21%	12.46%	

#### **MOISTURE-DENSITY CURVE**



Page: 1

Wed Mar 21 14:33:44 2001

#### CALIFORNIA BEARING RATIO ASTM D 1883-93

Project : RIANG Hanger

Test No. : CBR1

Test Date : 03/20/01

Project No. : 3321

Sample No. : Sample 1

Tested by : MCH/CCP

Location : Quonset Point, RI

Sample Type : Remolded

Checked by : jdt

Soil Description : Very dark gray silty sand with gravel & organics Sample Preparation : Compacted to 95% of Max Density @ 8.0% moisture

Remarks : ---

Height : 4.580 (in)

Sample was : SOAKED

Void Ratio : 0.33

Area : 28.27 (in^2)

Piston Friction : 0.00 (1b)

Wet Unit Weight : 131.56 (lb/ft^3)

Volume: 129.50 (in^3)

Swell : 0.00%

Dry Unit Weight : 122.39 (lb/ft^3)

Weight : 11487.00 (gm)

Surcharge : 4960.00 (gm)

CBR at 0.1 in. : 23

CBR at 0.2 in. : 20

CBR at 0.3 in. : 17

CBR at 0.4 in. : 16

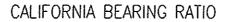
After Test

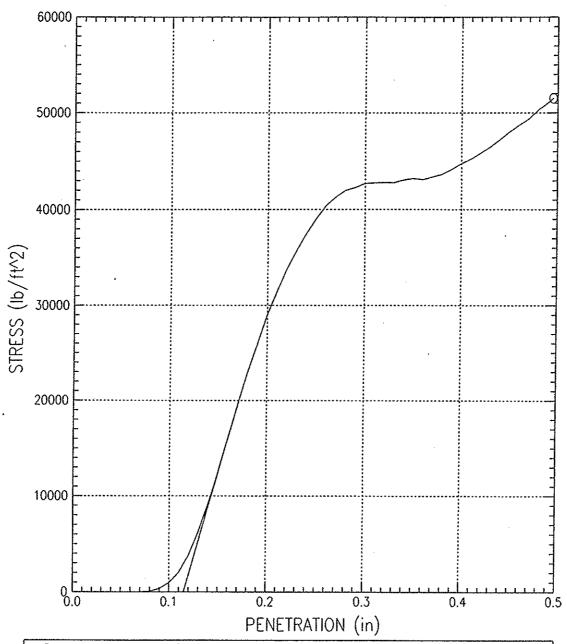
CBR at 0.5 in. : 16		top 1"	average
CONTAINER NO.	jgb52	k112	new2
WT CONTAINER + WET SOIL (gm)	307.85	549.10	670.82
WT CONTAINER + DRY SOIL (gm)	287.02	488.86	614.17
WT WATER (gm)	20.83	60.24	56.65
WT CONTAINER (gm)	9.09	8.17	9.67
WT DRY SOIL (gm)	277.93	480.69	604.50
WATER CONTENT (%)	7.49	12.53	9.37

Initial

NOTE: ASTM Designation: D 1883 - 93 states that the bearing ratio reported is normally the one at 0.10 in. penetration. When the bearing ratio at 0.20 in. penetration is greater, rerun the test. If the check test gives similar results, use the bearing ratio at 0.20 in. penetration.

Results are reported for penetrations in increments of 0.1 inches. The user of these data should interprete the data to obtain a design value of CBR.





Symbol:

0

Project Name: RIANG Hanger

Project No

3321

Sample No:

Sample 1

Test Date :

03/20/01

Test No:

CBR1

CBR at 0.10 in.: 23

